

POPULAR Computing WEEKLY

Only 50p.

3-9 April 1987

Vol 6 No 14

NEWS DESK

New machines announced by
IBM this week

Mastertronic in Amiga
coin op deal

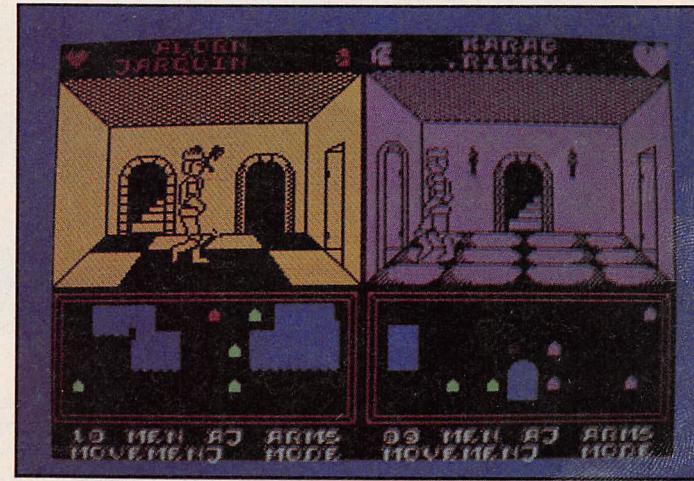
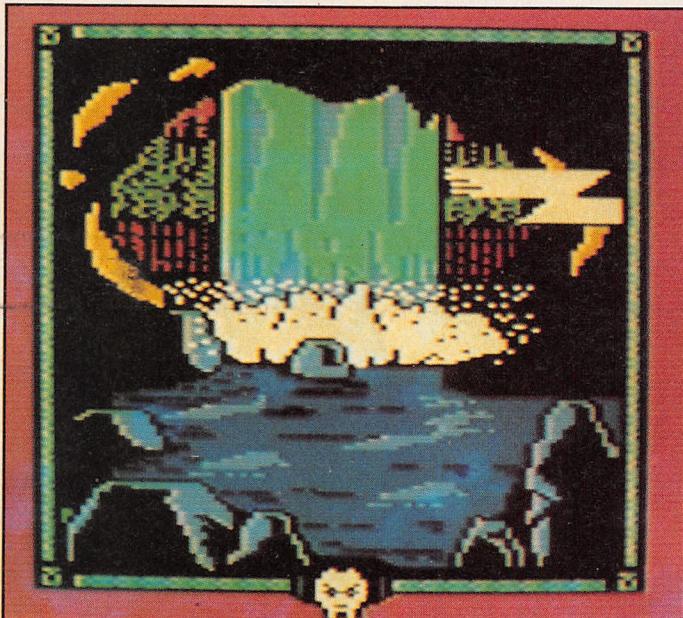
Addictive Games hooked by
Prism Leisure

Amiga 2000 - available now

SPECIAL supplement

Computers and music

Shadows of Mordor (Lord of the Rings II)



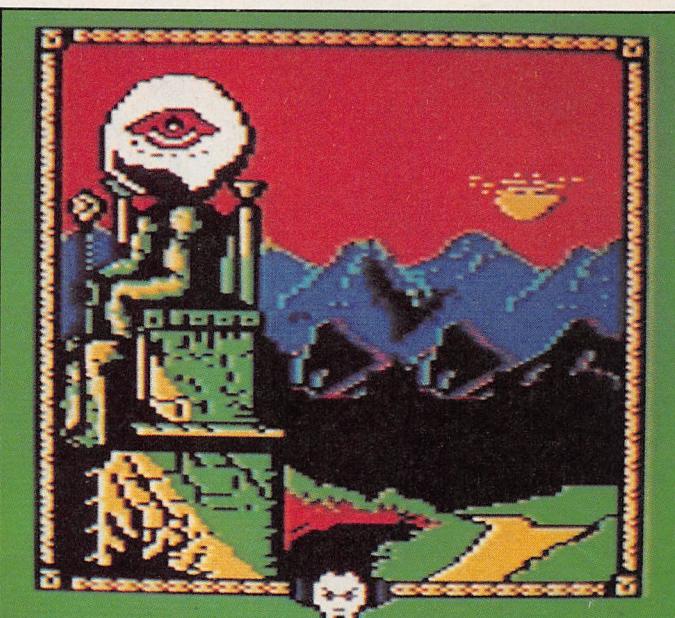
Throne of Fire

FEATURES

Mike Singleton's Throne
of Fire: reviewed page 19

Fast disc drive for the C64

Shadows of Mordor - The Lord
of the Rings saga continues



Is This Really Auf Wiedersehen Monty?



Just a few lines between
continental heists and yet
more hairy escapades to
say hello to all my fans
and invite you on my most
exciting and exacting journey to
date, a whistle stop tour of the
capitals of Europe acquiring more
than just the local scenery on
the way.

Dops... must dash... gendarmes
hot on my tail. Will write again
soon with more news of my
exhilarating escapades and
growing booty bag.

Monty



To
MONTY MOLE
FANS
EVERWHERE

Fantastic full colour wall poster only 99p,
see pack for details. Auf Wiedersehen Monty purchased branches of WH Smith



FREE
Lapel
Badge
with all
games

MSX
Spectrum 48K
tape £7.99

CBM64/128
tape £9.99,
disk £14.99

Amstrad
tape £9.99,
disk £14.99

GREMLIN

Gremlin Graphics Software Limited, Alpha House,
10 Carver Street, Sheffield S1 4FS. Tel: 0742 753423

SOFTWARE ►

13 Reviews

Matrix, an integrated package from Audiogenic, and disc utilities in the shape of *Handyman*.

16 C64 add-ons

Your Commodore 64 smartened up with these two add-ons from Evesham Micros. First off, a 64C-style casing; secondly a fast disc drive.

16 Joy Con

Two joysticks, one port.

GAMES ►

18 Reviews

Go for the burn with Mike Singleton's latest, *Throne of Fire*... Tynesoft's *Pluton* on the Atari ST will only set you back £15... and CDS's *Steve Davis Snooker* for the PCW, with added pool and billiards games.

22 Arcade Action

14 Sprite Designers

Duncan Evans tries out two sprite design packages for the ST: *Sprite Construction Set* from Microdeal and *Pro Sprite Designer* from Eidersoft.

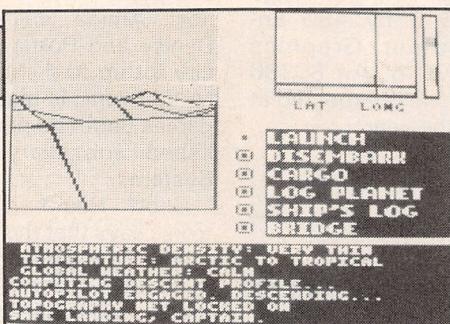
◀ HARDWARE

17 Anti Glare filters

Easier on the eye.

17 Special Offer

We've teamed up with Volex Electronics to offer its TTX2000S teletext adaptors for the Spectrum at a specially reduced price.



23 Adventure Corner

◀ PROGRAMMING

35 Spectrum

Lightshow – call it a programmed firework display.

35 Amstrad CPCs

Making use of colour.

36 Commodore 64

Define your function keys.

37 BBC

Part two of Multisave – A W Prys's automatic save plus printer utility.

37 QL

You can't lose any data with this set of save utilities.

41 Bytes and Pieces

42 Peek and Poke

REGULARS ►

4 News Desk

Hotlines – Shadows of Mordor.

10 Letters, Puzzle

11 Chess Tournament

45 Soundcheck

Mark Jenkins has news of packages suitable for the music beginner.

46 Communications

Steve Gold went in search of

cheaper phone bills and found Mercury Communications.

52 New Releases

54 Ziggurat, Hackers

Editor Christina Erskine News editor John Brissenden Features editor John Cook Technical editor Duncan Evans Production editor Michelle Beauchamp Supplements editor Christopher Jenkins Supplements designer Barbra Hajek Marketing and Advertisement manager David Osen **Advertisement executives** Jon Beales, Athena Peerman Classified executive Susannah King Editorial secretary Annmarie O'Dwyer **Administration** Geraldine Smyth **Managing editor** Peter Worlock **Publishing director** Jenny Ireland. Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 Fax 01-439 0681 Typeset by Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire. Printed by McCorquodale Magazines, Andover, Hampshire. Distributed by S M Distribution, London SW9, Tel 01-274 8611, Telex 261643. © Sunshine Publications Ltd 1987. ISSN 0265-0509

Popular Computing Weekly. Tel: 01-437 4343.

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

SPECIAL SUPPLEMENT
Computer music

25 News

If it's happening on the music front, you'll find it in these pages. Includes information on the latest German imports and musical bulletin boards.

27 Datel Sampler

Add breadth to your Commodore 64 with Datel's sound sampler.

29 Mastertracks PC

One doesn't always associate the PC compatible machines with music making, but Passport is out to change all that with this Midi composition package.

30 Score printing

For the BBC, EMR's program lets you print out your compositions in musical notation.

32 C64 Midi composition

More from Passport, but this time for the Commodore 64.

IBM PC2s launched

IBM is expected to launch the long awaited successor to the PC range this week.

The four models in the Personal System 2 range: the 30, 40, 50 and 60 are understood to feature 3½ inch floppy discs, and to use surface mount technology and a new operating system, CP DOS 1.0. This was developed jointly with Microsoft.

The entry level Model 30 comes with single or dual 3½ inch floppy drives, and uses a 7.54Mhz 8086 processor. This is expected to cost around £1,000 including monitor.

The new machines are expected to differ substantially from the existing PC/XT/AT range, and compatibility will be a problem. For example the new machines' 16-bit expansion bus is thought to be a deterrent to clone manufacturers, but is also worrying existing PC range users.

The 40 and 50 are both built around 80286 processors. In addition the range uses the 640 by 480 Enhanced Colour Graphics Adaptor (ECGA). An 80386 based machine is expected at the end of the year.

Amiga B-52 boards – Mastertronic's secret weapon

BALLY is not the only company to use Amiga technology in its dedicated arcade games (see *Popular Computing Weekly*, March 27); Mastertronic has now revealed that its arcade cabinets, launched last week in the US, also contain Amiga 'B-52' boards.

The customised B-52s comprise the 68000 processor, Amiga chips Agnus, Denise and Portia and capacity for up to 1½ Mb of code. Mastertronic is marketing the games under its newly established subsidiary, Arcadia Systems.

Geoff Heath of Mastertronic says that the games are due to be released in arcades in the UK "in about six weeks time". So far, the games only have provisional titles, although one will almost certainly be called *Road Wars*.

Mastertronic/Arcadia's deal with Commodore means that it is now in direct competition with Bally: "The difference is that they're a multi-million pound company, and we're still working on it," says Geoff Heath.

"The deal means that we also have the rights to con-



Heath: working on it

vert the arcade titles to home computers, of course," he added. This will not take place, however, until much later in the year. The company has a large number of arcade originals in development, being programmed both in the UK and US.

● Mastertronic is enjoying yet more chart success with its diversion into the record business. Its *Heat of Soul* compilation LP, released under the Mastersound label, entered the album charts at number 96 after just four days on sale.

Microprose plans for '87

MICROPROSE UK boss Stewart Bell last week revealed some of the company's plans for 1987.

There are two major developments following this year's launch of *Gunship*, and the Amiga version of *Silent Service*.

The first is a new game, *Pirates*, due for release next month. As the title suggests, this is a move away from military titles such as *Gunship* and is set on ships sailing the Spanish Main in the 17th century. Further details are expected shortly.

As the game is aimed at a slightly younger market than some previous Microprose products, the target price is expected to be £12.95 rather than £14.95.

The other development is the launch of a new label. Details are very sketchy – in fact it doesn't have a name yet. Microprose was going to call it Eclipse, but that has already been used by Data General. One product Microprose is working on for the label is a flight simulation, using solid '3D' graphics expected later in the summer.

The label is expected to



Bell: diversification

form part of a general diversification for the company. This will not only result in a wider variety of games, but also a move into other software applications, eg, desktop publishing, and even hardware.

The company also plans to enter into joint venture agreements with four more US software houses, following the deal with Origins (see *Popular Computing Weekly*, March 6). One contract with an as yet unnamed company has, according to Bell, already been signed.

Prism gets Addictive

ALL Addictive Games' products have now been taken over by Prism Leisure Corporation, following the marketing deal signed by the two companies for Addictive's enduring bestseller, *Football Manager*.

Prism has also signed up Addictive's founder and managing director, Kevin Toms, to produce four more games over the next two years. Addictive's newly launched *President* will also now be available from Prism as part of the deal.

As Prism has also acquired rights to Addictive's name and that of its subsidiary

label, Silicon Joy, Toms will now be operating as KJT Design Ltd.

This is the first acquisition for Prism, since its Unlisted Securities Market (USM) placing on February 24.

Correction

In our review of the Pace Series 4 modem range (Hardware, March 27), we inadvertently referred to the Series 4 as a Modem House product in one instance. This of course is utter nonsense – the modems are produced by Pace Micro Technology, as stated elsewhere in the article.

'While you wait' test for modems

THE British Standards Institution gave hope to modem manufacturers last week, with the announcement of a "while you wait" testing service at its Telecommunications Laboratory in Hemel Hempstead.

The facility covers all the "signalling, spectral and electrical requirements of BS6305, BS6320, BS6328 and DTI Technical Standard 83/0091," says the BSI. This means that it will enable most of the performance of a facsimile machine, modem or telephone to be assessed in one day.

The service is also sufficient for the needs of the British Approvals Board for Telecommunications (BABT) tests. BABT approval is necessary for any equipment connected to the British Telecom network.

Approved equipment carries a green circle. It is not illegal to sell unapproved equipment which carries a red triangle, but it is illegal to connect it to the Telecom

network.

The problem for modem manufacturers has been that once equipment has been submitted for BABT approval, it can take months for that approval to be granted. That delay is a serious problem for manufacturers. Will this service change things?

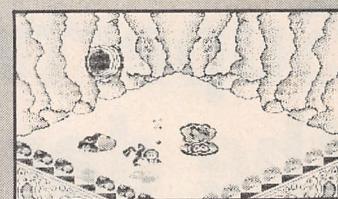
"The test house capacity is not a limiting factor," says Barry Cartman, Assistant Director of the BABT. He said that over recent months, the Board has opened new test facilities at Kingston-upon-Hull and Harlow.

"I'm afraid a major part of the problem is a shortage of manpower, and we are in fact currently undertaking a major recruitment drive," Cartman went on.

"And it has to be said that it's physically impossible to do all the regulatory testing of a modem in one day.

"But I'm pleased by any arrangement by any test house that moves in the direction of shortening the time taken for testing."

Software Hotlines



Melbourne House looks like being busy for the next couple of months or so, with a whole bunch of releases coming up. We mentioned *Doc the Destroyer* and *The Mystery of Arkham Manor* a couple of weeks ago — but after that lot comes *Wiz*, a game of runes and spell casting, written by Simon Price, who co-wrote *Kwah* and *Redhawk* (see screen shot below).

The adventure all the pixies are waiting for, *Shadows of Mordor (Lord of the Rings II)* will be out in June and don't the graphics look pretty?

Problem though — the full interactive graphics will only be available on Commodore disc. Not a graphic to be seen on Amstrad CPC; on Spectrum you load them separately and use them as a Middle Earth gallery but the Commodore tape will have a selection which come up as you play.

Programmed over in Australia, the guys at Beam Software have not let the seriousness of the *LOR* project get to them — their latest goes under the working title of *Street Hassle*, in which a school teacher goes crazy, strips down to his kegs, and starts lashing out at anyone and everyone.

Victims include Hylda Baker look-alikes who retaliate by lobbing hand bags at you, ten to the dozen. On Spectrum and Commodore, with release in the autumn.

Another first for modern microcomputing — technology now allows you to watch *Brookside*, play in a major chess tournament and cheat, all at the same time.

John Cook

Gremlin Graphics' Canadian connection

SHEFFIELD-based Gremlin Graphics has announced a new tie-in with the Ottawa software development company Acme Animation.

Under the deal, which Gremlin claims represents a substantial and "very firm" commitment, Gremlin's future products will be developed in close cooperation with Acme chief Michael Bate.

"The opportunity of working with Michael Bate gives us the opening into the US market that we have been waiting for," said Gremlin's managing director Ian Stewart.

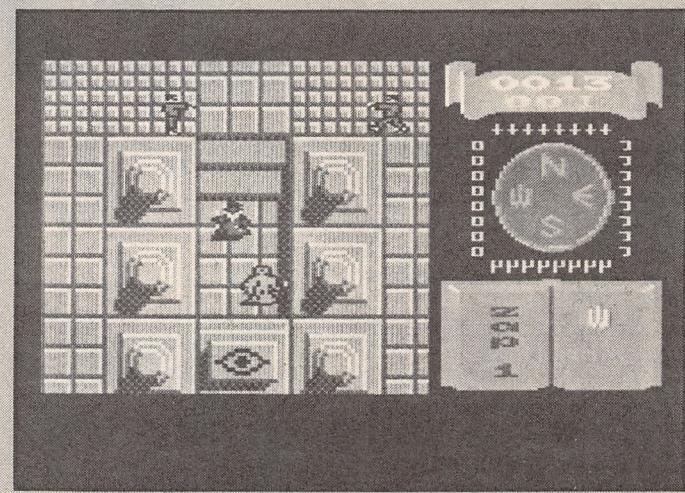
Stewart told *Popular Computing Weekly* that the first results of the Canadian connection were under way. A

flight simulator and arcade game are due for release during November.

"I think I would prefer Gremlin to send programmers to Canada for a period of time to complete the projects, so you could say I'm looking for programmers to travel the world," Stewart added.

"We're looking to expand the Canadian side, by building Acme up. That way we'll have a very strong flow-through of products."

But Stewart also emphasised Gremlin's commitment to its UK operation. In addition to Gremlin's programming studios in Sheffield and Birmingham, a new one in Derby will be ready in six weeks.



Supertwist firms in the dark over MOD

THE Ministry of Defence has said it is writing to several computer manufacturers to obtain licensing agreements for its Supertwist technology, used in, among other machines, the LCD display on Sir Clive Sinclair's Z88 portable.

But mystery surrounded the move last week. Sir Clive Sinclair, for one, was unaware of any approach by the MoD, and Epson, which manufactures the display for Cambridge Computer, had not yet been contacted either.

Epson UK's Manager of Corporate Communications Edward Huggins was aware of the MoD's concern, but was surprised not to have been contacted. If and when the MoD did get in touch, how might it affect the Z88?

"It's very hard to say, be-

cause it depends on a whole range of things. We'd be very interested to hear from them, because we don't know how they would define the parameters of a licensing agreement, and how we have been infringing those parameters," he said.



Sinclair: Unaware

The technology gives LCD displays contrast nearly as good as VDUs, and has been developed by several manufacturers, particularly in Japan. But it was invented in 1982 by scientists at the Royal Signals and Radar Establishment, based at Malvern in Worcestershire.

Patent protection was sought, and is currently held by the Ministry in the UK, USA and Canada. An MoD spokesman said that they shortly expect protection to be granted for Europe, but a Japanese patent could take 12 to 18 months.

It is likely that adherence to patent protection agreements would affect prices, but the MoD wouldn't, and Epson couldn't say exactly what the effect would be on the Z88.

A2000 ships early

COMMODORE has begun deliveries of the Amiga A2000 to dealers, several weeks before it was due.

When the A2000 and A500 were launched in early March (see *Popular Computing Weekly*, March 13), Commodore said the A2000 wasn't due until April at the earliest. In fact, distributors began receiving A2000 units in the fourth week of March. Commodore UK managing director Chris Kaday claims the move is due to the response by public and dealers to that launch.

"We are delighted to be shipping the new A2000 early following a positive press from this month's launch which has generated a high volume of inquiries from potential users and dealers alike," he said.

"We are now ready to fulfil their expectations."

A Commodore spokesman was unable to give any further details on Commodore's other two recent launches. The expected June shipping date for the A500 still stands,



Kaday: Delighted

and no more light was shed on the PC1, the machine unveiled to everybody's surprise at the Hannover Fair last month.

MORE NEWS ON PAGE 8

Pride wins damages

PRIDE Utilities, the Amstrad software supplier, has won £10,000 damages in part of its legal action against its former French distributor, ESAT (see *Popular Computing Weekly*, 18-31 December 1986).

ESAT had been a large customer of Pride, since France is a lucrative market for utilities. But towards the end of last year orders had been dropping off.

"Payments slowed up, until they owed us £10,000," Frank Severini of Pride said at the time.

When Pride sent an agent to the Bordeaux shop of ESAT, he found that the company was duplicating Pride software on a large scale.

Pride was able to obtain £9,000 in settlement of money owed, before starting legal action for piracy in Bordeaux shortly before Christmas.

The figure also includes costs, and Pride has been told by its French solicitors that ESAT has been given eight days to pay. The piracy action continues.

DIARY DATES

APRIL

11 April

Dragon Computer Show

Ossett Town Hall, nr Wakefield, W Yorks

Details: Software, hardware and demonstrations for Dragon users

Price: £1 adults, 50p children and OAPs

Organiser: John Penn, 04203 5970

24-26 April

The Atari Computer Show

Novotel, London W6

Details: First chance for Atari to show off exciting new strategy

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

MAY

2-3 May

First Ideal

Microcomputer Show

Kensington Exhibition Centre

Details: Software, hardware, peripherals for consumer users

Price: £3 on door, £2 in advance

Organiser: RAMCO International Exhibitions, 01-906 3363

8-10 May

The Electron & BBC Micro User Show

New Horticultural Hall, London

Details: Software, hardware and peripherals for Acorn's micros

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

JUNE

12-14 June

Commodore Show

Novotel, Hammersmith

Details: First public showing of A500 and A2000 Amigas.

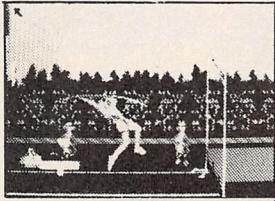
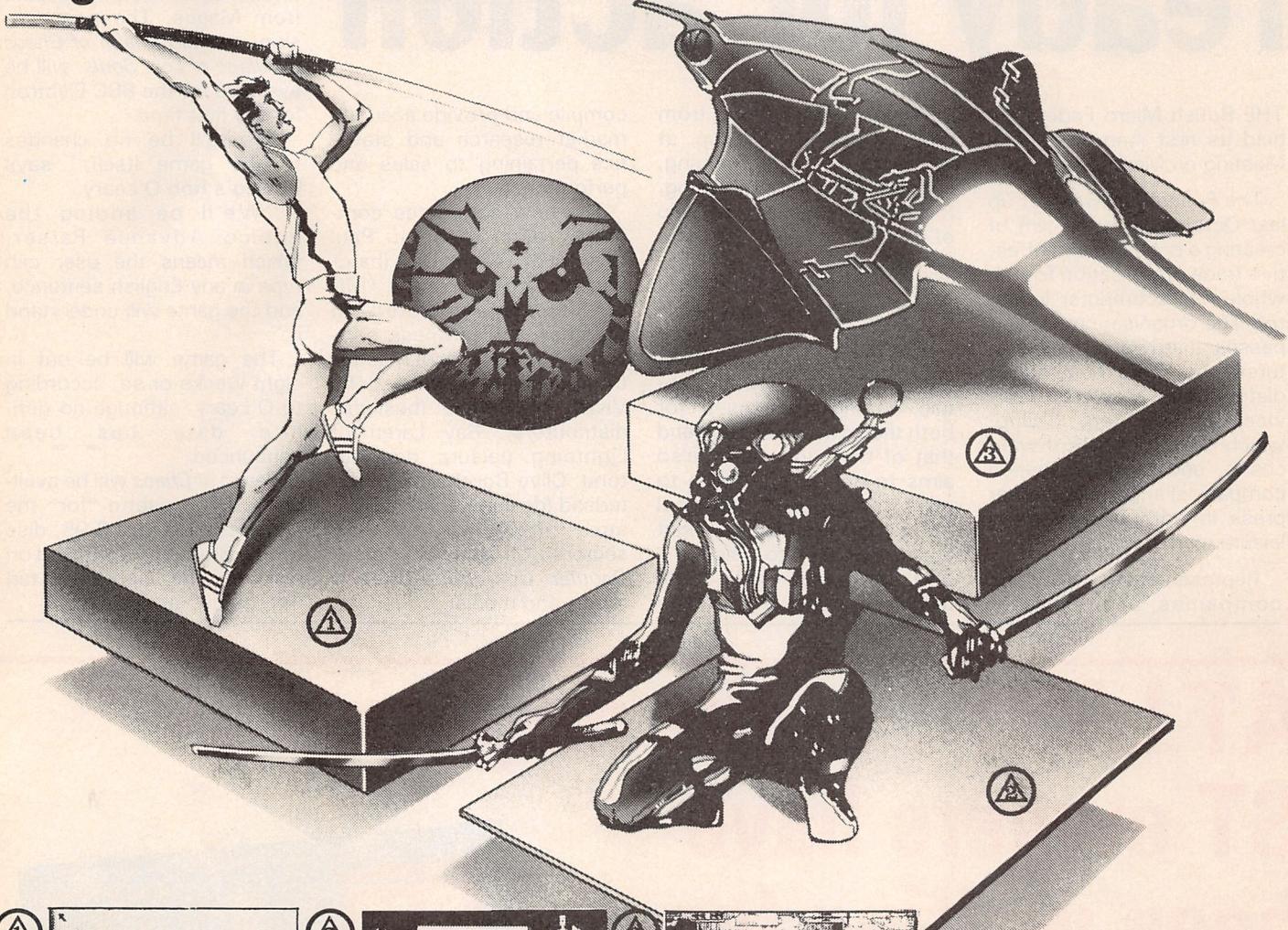
Price: £3 adult, £2 children

Organiser: Database Exhibitions, 061-456 2991

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

TAKE 2!

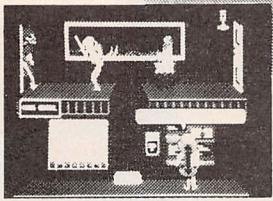
**Arena and Brataccas
now available
together at £34.95**



ARENA

The classic sports simulation. Humour, competition and multi-player rivalry, enhance what can only be described as graphics of unsurpassed realism. Become an athlete, compete with your friends, only the most skilled will ultimately win. No other product has managed to capture the 68000 processor to achieve this level of graphical sophistication.

512k colour versions available for Atari ST and Commodore Amiga - colour monitors only.

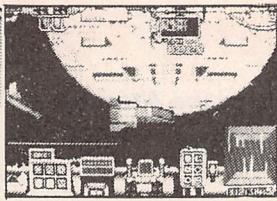


BRATACCAS

Brataccas engineered like no other software; described as the product that broke the mould.

Take the challenge, become Kyne the earth scientist accused of the hideous crime of genetic fraud; flee to the outskirts of the solar system; struggle to survive in the hostile environment; above all prove your innocence. Brataccas the first of a new range of computer games.

512k colour and black and white versions available for Atari ST, Commodore Amiga and Apple Macintosh



DEEP SPACE

The ultimate interstellar war game. A full 800k of machine code harnessing the raw power of the 68000 processor to bring unique 3D solid graphics to the microcomputer. Become a mercenary of the future in search for wealth; pilot an awesome fighting machine; travel star systems looking for adventure... the experience of deep space.

512k colour versions available for Atari ST and Commodore Amiga - colour monitors only.

► Deep Space £34.95

► Brataccas £34.95

► Arena £29.95

► Arena £34.95

► Brataccas £34.95



Psygnosis

FREEPOST

Liverpool

L3 3AB

United Kingdom

Tel. Nos.

051 647 8118 (Daytime)

051-227 4800 (After hours)

S E E I N G I S B E L I E V I N G

Industry body ready for action

THE British Micro Federation held its first Annual General Meeting on March 25.

The Federation was set up last October with the aim of creating a cohesive and effective trade organisation for the whole microcomputer industry. The organisation encompasses hardware manufacturers, software companies, distributors, retailers, 'service sectors' (eg, Gallup, which compiles the software charts, and tape duplication companies) and the computer press in both business and leisure markets.

Representatives from 65 companies attended the

meeting to hear reports from working parties set up at October's inaugural meeting, suggest ways of progressing, formally take out membership of the BMF and elect the committee proper.

The BMF has several main objectives. It will act as a forum for discussion between different industry sectors, and establish a code of practice among companies for both their own protection and that of the consumer. It also aims to act as one voice to government and national press and media, to fight against piracy, to raise the professionalism and credibility of the industry, and to

compile and provide accurate market research and statistics pertaining to sales and performance.

The new committee comprises eight people: Paul Welch of Atari UK (hardware); David Fraser, MD of Microsoft (elected to the chair and business software); Geoff Heath of Mastertronic (leisure software); John Vivian of Softsel (business distributors); Ray Laren of Lightning (leisure distributors); Clive Booth of Computerland (dealers); Simon Treasure of Gallup (service sectors); Christina Erskine of *Popular Computing Weekly* (press and media).

Robico's 'Village' in 'Chaos'

ROBICO Software has signed the rights to *Village of Lost Souls*, previously available from Magus. The new version, entitled *Realm of Chaos* – *Village of Lost Souls*, will be available for the BBC Electron for the first time.

"There'll be no changes to the game itself," says Robico's Rob O'Leary.

"We'll be adding the Robico Advance Parser, which means the user can type in any English sentence, and the game will understand it."

The game will be out in eight weeks or so, according to O'Leary, although no definite date has been announced.

Realm of Chaos will be available on cassette for the Amstrad CPC for £9.95, disc for the BBC at £12.95, and on disc for the eight-bit Atari "probably" at £14.95.

AT LAST . . . the magazine ST owners have been waiting for

The magazine devoted exclusively to the Atari ST – ST graphics, ST music, ST programming, ST games and ST software.

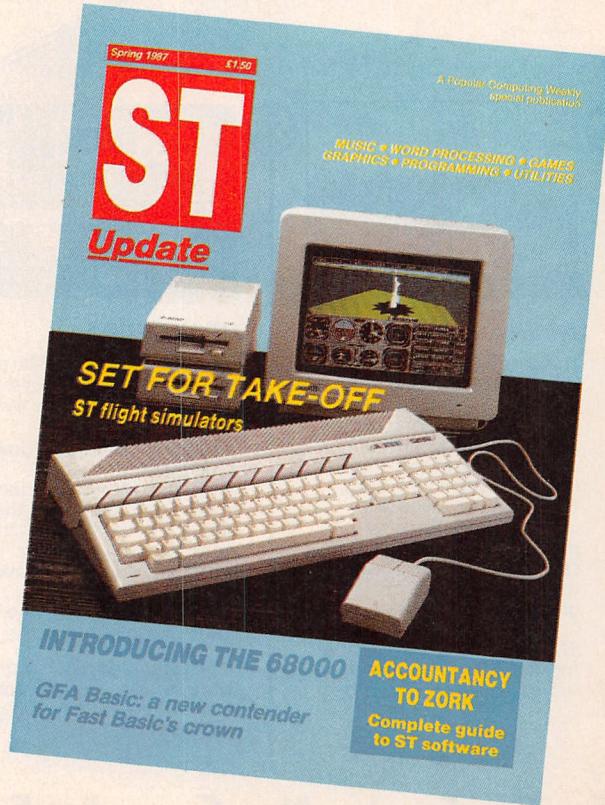
In the pilot issue you'll find:

Special feature on ST flight simulators
Introduction to programming the 68000
Four word processors compared
Six graphics packages reviewed
N-n-n-nineteen of the very best games
Dozens of music packages appraised
Nearly 300 software packages detailed
(No partridge in a pear tree but . . .)

Special offers worth £17

Exclusive to readers of ST Update: save £12 on the cost of Aaronfay's excellent Datacom communications software and £5 on the price of Metacomco's MCC Assembler

If you own an ST – if you're thinking about owning an ST – don't think about missing ST Update. ON SALE NOW!





Once Bytten

59 SWANLEY ROAD
WELLING, KENT DA16 1LL
Tel: 01-304 2631

(Callers by appointment only)

Cheques and P.O.s to AMTEN LIMITED please

PLEASE NOTE OUR NEW ADDRESS AND PHONE NUMBER!!!
ONCE BYTSEN DISCS (by top manufacturers)
ALL WITH LIFETIME WARRANTY

With labels and hub ringed (5 1/4" with sleeves)

	10 Boxed in library case	25	50	100
5 1/4" SSDD 96tpi	£6.95	£12.95	£23.50	£44.00
5 1/4" DSDD 96tpi	£7.95	£13.95	£25.95	£45.95
3 1/2" SSDD 135tpi	£14.50	£33.95	£62.95	£117.50
3 1/2" DSDD 135tpi	£16.95	£37.50	£72.50	£139.95

3" DS Discs (Maxell/Amsoft) 10 for £27.50

3" DSDD Discs 5 in library case for £17.95

FACTORY FRESH - BRANDED DISCS (Price per 10)

	SONY	MAGNAVOX
5 1/4" SSDD 48tpi	£10.85	£10.85
5 1/4" DSDD 48tpi	£11.54	£11.54
5 1/4" DSDD 96tpi	£16.37	£17.06
5 1/4" High Density	£23.96	£25.34
3 1/2" SSDD 135tpi	£18.44	£19.82
3 1/2" DSDD 135tpi	£22.58	£24.65
3 1/2" High Density	£54.32	£54.32

(All branded discs are boxed in tens, manufacturers' original packing)

NOTHING MORE TO ADD!!! ALL PRICES INCLUDE VAT AND P&P.

SPECTRUM SOFTWARE SMASH!!!

SUPER CYCLE	£3.99	TOP GUN	£3.99
GALACTIC	£3.99	HIT PACK	£3.99
STAR KUNG FU II	£3.99	MASTERS OF UNIVERSE	£3.99
AVENGER	£3.99	TEARS OF TRANTOS	£3.99
DEACTIVATORS	£3.99	CAMELOT WARRIORS	£3.99
TOADRUNNER	£3.99	TUJAD	£3.99
VALKYRIE 17	£3.99	SKYFOX	£3.99
FOURTH PROTOCOL	£3.99	THEIR FINEST HOUR	£3.99

OR BUY ANY 10 FOR ONLY £30!!!

(PRICES INCLUDE VAT AND P&P.)

WANTED!!!

We want to buy your computer, your printer, your disc drive, your modem, your monitor, your software, your spelling checker, FOR CASH!!!

WE WILL GIVE EVEN MORE IN PART EXCHANGE ... Against the latest micros from AMSTRAD, ATARI, COMMODORE et al.

FOR A QUICK QUOTE (or a slow lingering one) ring:

KEITH McGOVERN on 01-407 8447 Mon-Fri 9am-6pm
or 01-304 2631 Mon-Sat 8pm-10pm



ORDER LINE 01-304 2631 9am to 10pm



AMSTRAD PC1512

D/D MONO

AMSTRAD PC1512

D/D COLOUR

RRP £642.85

WAVE £600.00 (a)

£838.35

£765.00 (a)

Bondwell PC BW34 640K RAM dual ds 360K 5 1/4" drives	£769.35	£631.100 (a)
12" green monitor Bundled MS DOS-GW basic		
Bondwell PC BW36 Specifications as BW34 except single		
drive + 20Mb Winchester hard disc	£1263.85	£1099.00 (a)
Amstrad DMP 2000 inc. FREE cable for CPC	£169.00	£150.00 (b)
Amstrad DMP 3000 inc. FREE cable for PC1512	£194.35	£185.00 (a)
Amstrad DMP 4000 inc. FREE cable for PC1512	£401.35	£343.85 (a)
Brother HR15 Daisywheel parallel	£449.00	£378.00 (a)
Epson LX86	£316.25	£225.00 (a)
Epson RX100 + 132 column	£529.95	£300.00 (a)
5 ONLY 20Mb Amstrad hard disc and network system inc.		
interfaces for CPC and PCW	£2500.00	£2164.00 (a)

COMMODORE AMIGA SYSTEM 1

512K hi-res colour monitor RRP £1258.10 WAVE £1000 (a)

THE AMIGA COMES WITH 12 MONTHS ON-SITE
MAINTENANCE CONTRACT AT NO EXTRA COST

128K memory upgrade kit/PC1512

£57.50 £23.00 (d)

20Mb hardcard/PC1512

£516.35 £417.00 (a)

20Mb hard disc system/PC1512

£363.80 £23.00 (a)

Amstrad CF2 3" discs (box of 10)

£49.50 £23.00 (d)

Wabash datatech 5 1/4" DS/DD 48tpi (pkt. 10)

£8.00 £23.00 (d)

Wabash datatech 5 1/4" DS/DD 96tpi (pkt. 10)

£10.00 £23.00 (d)

Wabash datatech 3 1/2" DS/DD 135tpi (box 10)

£18.00 £23.00 (d)

APRIL OFFER

Amstrad PCW 8512 inc. printer, monitor and software inc.
FREE Linc teach yourself locoscript RRP £14.95

£573.85 £513.00 (a)

Timatic Web 20Mb hard disc/PCW

£689.99 £650.00 (a)

Arnor Protext w/p inc. mailmerge and spellingchecker

£79.95 £55.00 (c)

6128/PCW

£79.95 £55.00 (c)

ALL PRICES INCLUDE VAT. Maximum carriage & insurance charge £5 per parcel/£500.

Add carriage as follows: (a) £5.00 (b) £4.00 (c) £3.00 (d) £2.00 (e) £1.00 (f)

50p. Despatched by return of post. Prices in this advert are valid for 14 days.

W.A.V.E. (Dept. PCW 304)

Walney Audio Video & Electrical

53 Shearwater Crescent, Barrow-in-Furness,
Cumbria LA14 3JP. Telephone: 0229 44753

Once Bytten

59 SWANLEY ROAD

WELLING, KENT DA16 1LL

Tel: 01-304 2631

(Callers by appointment only)

Cheques and P.O.s to AMTEN LIMITED please

PLEASE NOTE OUR NEW ADDRESS AND PHONE NUMBER!!!

ONCE BYTSEN DISCS (by top manufacturers)

ALL WITH LIFETIME WARRANTY

With labels and hub ringed (5 1/4" with sleeves)

10 Boxed in library case 25 50 100

5 1/4" SSDD 96tpi £6.95 £12.95 £23.50 £44.00

5 1/4" DSDD 96tpi £7.95 £13.95 £25.95 £45.95

3 1/2" SSDD 135tpi £14.50 £33.95 £62.95 £117.50

3 1/2" DSDD 135tpi £16.95 £37.50 £72.50 £139.95

3" DS Discs (Maxell/Amsoft) 10 for £27.50

3" DSDD Discs 5 in library case for £17.95

FACTORY FRESH - BRANDED DISCS (Price per 10)

	SONY	MAGNAVOX
5 1/4" SSDD 48tpi	£10.85	£10.85
5 1/4" DSDD 48tpi	£11.54	£11.54
5 1/4" DSDD 96tpi	£16.37	£17.06
5 1/4" High Density	£23.96	£25.34
3 1/2" SSDD 135tpi	£18.44	£19.82
3 1/2" DSDD 135tpi	£22.58	£24.65
3 1/2" High Density	£54.32	£54.32

(All branded discs are boxed in tens, manufacturers' original packing)

NOTHING MORE TO ADD!!! ALL PRICES INCLUDE VAT AND P&P.

SPECTRUM SOFTWARE SMASH!!!

SUPER CYCLE	£3.99	TOP GUN	£3.99
GALACTIC	£3.99	HIT PACK	£3.99
STAR KUNG FU II	£3.99	MASTERS OF UNIVERSE	£3.99
AVENGER	£3.99	TEARS OF TRANTOS	£3.99
DEACTIVATORS	£3.99	CAMELOT WARRIORS	£3.99
TOADRUNNER	£3.99	TUJAD	£3.99
VALKYRIE 17	£3.99	SKYFOX	£3.99
FOURTH PROTOCOL	£3.99	THEIR FINEST HOUR	£3.99

OR BUY ANY 10 FOR ONLY £30!!!

(PRICES INCLUDE VAT AND P&P.)

WANTED!!!

We want to buy your computer, your printer, your disc drive, your modem, your monitor, your software, your spelling checker, FOR CASH!!!

WE WILL GIVE EVEN MORE IN PART EXCHANGE ... Against the latest micros from AMSTRAD, ATARI, COMMODORE et al.

FOR A QUICK QUOTE (or a slow lingering one) ring:

KEITH McGOVERN on 01-407 8447 Mon-Fri 9am-6pm
or 01-304 2631 Mon-Sat 8pm-10pm

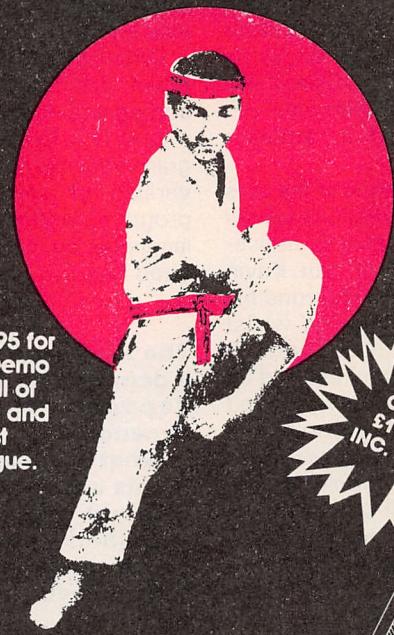


ORDER LINE 01-304 2631 9am to 10pm

ST Karate

"Karate makes its entry into the ST world, and how!"

ST USER
DEC '86



SEND £1.95 for our PD Demo disk, full of software and latest catalogue.

ONLY £19.95 INC. VAT

- Incredible graphics
- 18 different movements including: kicks, punches and somersaults
- Multi-screen action
- Large, fast flicker free sprites
- 1 or 2 players at the same time
- Digitised sound
- Available at good computer shops or direct from Eidersoft Software Ltd
- Also available USA. Double Packs Space Station/Protector

War Zone/Fireblaster

- only £24.95 2 disks

Eidersoft Software Ltd,

The Office, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

Name: _____

Address: _____

I enclose a cheque/PO for £ _____

Please deduct my Access/Visa/American Express

Card No: _____

Exp date: _____



CREDIT CARDS TEL: 0708 856468

EIDERSOFT
SOFTWARE LTD.

Shake it up? Maybe

I was interested (for obvious reasons) to read what you wrote about our magazine *Shake!* in your excellent Spectrum Supplement in your March 20 edition.

However, I can't imagine that some of the acts who have been featured so far on the audio side of *Shake!* will be too pleased with your description of them as 'amateur bands'.

Admittedly none of the acts featured in the first few issues of *SHAKE!* are exactly household names (yet), but Kevin White . . . (*Shake* 5), runs his own record company, whilst The Lelu/Lus . . . (*Shake* 3) have already been featured on Channel 4's *The Tube* and look likely to be storming the pop charts in the near future!

Certainly I wouldn't describe either of these acts as 'amateur' and I can only hope that your comments don't lead to hordes of irate musicians converging on Little Newport Street!

Incidentally . . . I took your advice and grabbed hold of a copy of *Smash Hits*, but although I've managed to cut it up into little strips and got it to run through my cassette player, I've yet to get any decent sound out of it!!! Can you please inform me where I'm going wrong?

Roger N Foster
Editor, *Shake!*

The copyrights and wrongs

Would you please supply me with some information concerning software copyright?

Is one allowed to call a program one's own if it is a modification of someone else's program?

What about a longer program which incorporates someone's design?

And is it OK to call a program your own if it is a conversion of someone else's program written in another language, eg, converting Amstrad Basic to Sinclair Basic?

A M K Vaughan
Fetcham, Surrey

The answers are: no, but it depends; perhaps, but it depends; no, but it depends.

What it all depends on, in this case, is where the original programs are published (commercially or as magazine listings) and what you intend to do with them.

If the original programs are commercially produced, then a longer program incorporating someone else's design would breach copyright if it was substantially similar, or a substantial part had been used. In the other two cases it would be an infringement of copyright.

With magazine listings,

the copyright becomes the magazine's, and permission is granted (by implication of the listing being printed out) for typing in, modifications, conversion, etc. But if you then try to sell your adulterated version to others, it becomes a breach of copyright.

Popular will be dealing with the thorny subject of copyright in a feature article in the next two to three weeks. Watch this space.

Memotech speedy

Bench Tests are the criteria by which micros should be judged. The Graphic Demo (Letters, March 20) compared the mathematical speed of the 16-bit PC1512 against the 8-bit Spectrum: 56 secs against the Spectrum's 6 mins 54 secs. Agreeably impressive, but the Spectrum is hardly an adversary.

I typed the Spectrum program as listed (minus the extra ')' error) into my Memotech 512. It returned 2 min 54 secs. Suddenly the 16-bit seems less impressive! Had Memotech been allowed to set the '8-bit standard' rather than say, Sinclair, the 16-bit designers would have needed to 'pull their socks up a bit' to claim viably significant improvements.

A further example is this

simple Spectrum listing which fills 16K bytes with random numbers and checks the match on re-run. The Memotech differences are shown in *ReMs*.

```
1 POKE 23674,0: POKE 23673,0:  
POKE 23672,0: REM CLOCK  
"000000"  
2 RANDomize 1000  
3 FOR A=30000 TO 46384  
4 POKE A, INT(RND*256)  
5 NEXT A  
6 PRINT INT((256*PEEK  
23673+PEEK 23672)/50): REM  
PRINT TIME$  
7 RANDomize 1000  
8 FOR A=30000 TO 46384  
9 IF PEEK A <> INT(RND*256)  
THEN PRINT A: BEEP 0.5,24: REM  
PRINT CHR$(7)  
10 NEXT A  
11 PRINT INT((256*PEEK  
23673+PEEK 23672)/50): REM  
PRINT TIME$  
BEEP 0.5,24: REM PRINT CHR$(7)
```

The Spectrum completes in 14 mins 21 secs. The Memotech takes just 3 mins one sec!

George Payne
Watford

The Elite Cheat latest

Can anyone help please? Does anyone know the name and address of the maker or distributor of a cassette called *Elite Cheat II*, which allows the player to set up *Elite* in a way to suit the player?

In my opinion, it broadens the appeal of the game, much like *Silent Service*, which has various 'switchable' parameters built into a menu.

M F Thienel
Romford

Puzzle

Puzzle No 252

Here is a multiplication sum in which the digits have been replaced by x's. Each of the ten digits, zero to nine, have been used once, and once only. As you can see, the position of one of the digits, the '2' has been indicated.

$$\begin{array}{r} x \ x \ x \text{ (times)} \\ 2 \ x \\ \hline x \ x \ x \ x \ x \end{array}$$

Can you determine: i) The value of the other digits? ii) Two other sets of values if the 2 is exchanged for a 6 and a 7 in turn. (Each of these digits must still be in the position shown - ie, the 'tens' position of the two digit multiplier.)

Solution to Puzzle No 247

My first throw scored single 10, single 3, and

treble 12. My second throw scored single 15, single 19, and treble 5.

On a dart board, if we exclude the bulls, there are 60 different sections of the board, the single, double and treble scores for each of the 20 sectors. Each of these possible scores is stored in the array, the three extra values being a repeat of the first three to facilitate counting 'one place clockwise' from each of the sectors.

The three loops evaluate all possible scores obtainable with three darts. This is computed as T1.

The corresponding segment of the board one place clockwise is actually found by adding three to the subscript of the array (as each score, double, and treble, are in consecutive positions in the array).

Therefore, line 140 computes the score obtained from positions one place clockwise. If this score matches the first, and is equal to 49, the values are printed out.

Winner of Puzzle 247

This week's winner is Nigel Parsons, of Cardiff, who will receive £10.

Rules

The closing date for Puzzle 252 is April 24. Answers should include a program listing if possible.

```
10 DIM S(63)  
20 FOR N=1 TO 61 STEP 3  
30 READ Z  
40 S(N)=Z:S(N+1)=Z*2:S(N+2)=Z*3  
50 NEXT N  
100 FOR A=1 TO 58  
110 FOR B=A+1 TO 59  
120 FOR C=B+1 TO 60  
130 T1=S(A)+S(B)+S(C)  
140 T2=S(A+3)+S(B+3)+S(C+3)  
150 IF T1=49 AND T1=T2 THEN PRINT  
S(A),S(B),S(C):PRINT A,B,C  
160 NEXT:NEXT:NEXT  
1000 DATA 20,1,18,4,13  
1010 DATA 6,10,15,2,17  
1020 DATA 3,19,7,16,8  
1030 DATA 11,14,9,12,5  
1040 DATA 20
```

The fastest computer around

Reference Graphic Demonstration (Alastair Watt, March 20). In his letter he says that the same program on the Spectrum and PC1512 took six minutes, 54 seconds, and 56 seconds respectively. He also said that Basic 2 has a reputation for speed and what a dramatic example of the Amstrad's capabilities.

If it's speed he wants he ought to try the ST as the same program using Fast Basic took only 12.8 seconds so compared to the ST the 1512 looks like it's going backwards.

R W Hogarty
Plymouth

Garbled programs

My short program in *Popular*, February 26, was indeed garbled as J McCarthy notes (Letters, March 20).

There were ten misprints, but the only serious ones were in lines 100 (colon for 'equals') and 110, where the underscores were meant to be decimal points.

The formula is a text book one for the sum of the logarithms; Stirling's usual approximation omits the last term, but my QL is not so lazy.

C R Oswin
Christchurch, Dorset

2 to the rescue

After purchasing your magazine (March 20) your listing on page 31 for the Spectrum called Software Rescue has a large problem in it.

If you look at line 33 and 34 you should notice that two of the numbers have an 'r' in front of them. If you type in this listing and run it the program comes up with a fault.

The answer is simple, just find out what 'r' should be. But it's not quite so simple for people like me, who do not know machine code and cannot possibly guess 'r's value.

Gareth Smith

Market Harborough

The 'r' is meant to be a '2'.



Right of reply

Comments on Chris Jenkins' overview of *Fleet Street Publisher* (Software, March 20).

With regard to ease of use, our testers found the Guided Tour in the manual was extremely helpful in getting to grips with the program's more sophisticated features.

With regard to output, our sales of the basic dot matrix product indicated there is a demand at this level; 24-pin and laser drivers will be available within the next six weeks.

With regard to the inclusion of photographic illustrations, as you will know, photographs are normally pasted into blank picture blocks after type paste-up.

With regard to price, word processors for the ST are around £50-£60, and *Fleet Street Publisher* does a lot more than a word processor!

Pat Bitton
Marketing Director Mirrorsoft

The Hanover debate

In your latest issue, March 13, your reviewers, as always, are admirably keen on spelling accuracy.

Perhaps you could get them to have a look at your 'Hanover', which you have spelt

Colossus calls check

We've now completed move 14 in Game Two of our Readers vs *Colossus* chess tournament.

In Game Two, the Readers are playing white and have voted this time to move their queen's rook to square d1.

Colossus, playing black, has countered by putting the Readers team in check with the knight, moving from d4 to e2 to take white's bishop.

Now get out of that

Which is the best way to head off *Colossus* now? Send your suggested Readers move to either Inter-Mediates (*Popular Chess*), Freepost, Sawbridgeworth, Herts CM21 9YA (you do not need to use a stamp with this address), or *Popular Chess*, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 OPG (with a stamp).

Please note that if you use Freepost, your entries must be posted promptly - Freepost is slower than paid-for mail. All entries must reach either address by Wednesday, April 7.

The move which gets the most votes will be entered into the game. Results and *Colossus*'s response will be published in two weeks' time.

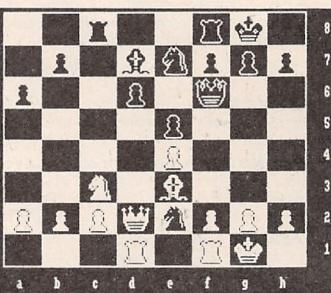
Prizes

A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most popular micros) will go to the most consistent entrants for the duration of the game.

Next week, we return to Game One, where the Readers are playing black.

Game Two

1	Pe2-e4	Pc7-c5
2	Ng1-f3	Nb8-c6
3	Pd2-d4	Pc5xd4
4	Nf3xd4	Pe7-e5
5	Nd4-b5	Pa7-a6
6	Nb5-d6+	Bf8xd6
7	Qd1xd6	Qd8-f6
8	Qd6-d1	Ng8-e7
9	Nb1-c3	Pd7-d6
10	Bc1-e3	Ke8-g8 o-o
11	Bf1-e2	Bc8-d7
12	Kel-gl o-o	Re8-c8
13	Qd1-d2	Nc6-d4
14	Ra1-d1	Nd4xe2+
15		



consistently that way for the last 12 months.

F C Sanderson
Derby

Actually, it was deliberate. Hanover is the English spelling; Hannover the German spelling. So it became the Hannover Messe (Fair) in Hanover. Not a very neat solution, I agree.

Future of the Enterprise

I am writing to inform your readers that the IEUG (Independent Enterprise users group) is holding its Annual General Meeting at St Mary's Hall, Hendon Lane, Finchley, London N3. The meeting is on Saturday, April 4, from 10.00am to 5.00pm. Bus routes are 143, 13, 260 and 26; nearest tube station Finchley Central.

All Enterprise owners (or

prospective owners) are welcome, not just IEUG members.

A selection of new software will be on show, the future of the Enterprise will be discussed and questions answered, and copies of Private Enterprise, the user group's magazine will be on sale.

If you want more details or wish to join IEUG, contact Neil Blaber on the IEUG hotline, 08926 3890, between 7.00pm and 10.00pm, seven days a week.

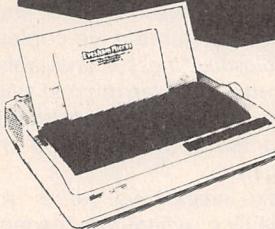
Mark S Smith
Weybridge

We're sorry but *Popular Computing Weekly* cannot guarantee to reply to all letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

Evesham Micros

SPECIALIST COMMODORE PRODUCTS

THE
Star
PRINTERS FOR BUSINESS



NL-10
WHICH MAGAZINE
BEST BUY

- Automatic single sheet handling
- Tractor feed built in
- "Front Panel" mode selection
- Double and Quad height characters
- 120 cps draft and 30 cps NLO

This is the best Commodore ready printer you can buy. Combines many unique features with superb reliability, styling and print quality. But the real beauty is that the interface cartridge is interchangeable so if you change computers just buy a new interface.

In a group test with other popular printers such as Epson, Citizen and OKI What Micro magazine described the NL10 as "the Rolls Royce of this group". ONLY £249.00

Automatic cut sheet feeder available as an option for £63.25

SELECTED PRODUCTS

SEIKOSHA SP 180VC

A new Commodore ready printer that offers both friction and tractor feed combined with NLO ability. Print speed is 100cps in draft and 16cps in NLO.

ONLY £189.95

1541C DRIVE. The latest version of the 1541, better drive mechanism and new colour ONLY £189.95

DISC NOTCHER. Double the capacity of your discs with this handy gadget. Cuts second write protect notch accurately and easily ONLY £5.95

AZIMATE 3000. Handy package allows you to easily check and realign the tape head of your CBM data recorder. Includes screwdriver ONLY £6.95

MOTHERBOARD. 4-slot, with either all upright sockets, or three upright and one through socket, to suit modem; please specify ONLY £28.00

POWER PACK. High quality replacement power pack for CBM 64 ONLY £24.95

XETEC SUPERGRAPHIX. The best centronics printer interface for your 64/128. Large buffer, downloadable fonts, etc. ONLY £69.00

DATA RECORDER. CBM compatible, same performance as the C2N/1531 but cheaper and includes a pause button. ONLY £24.95

Large stocks of Commodore-related equipment at sensible prices. If you don't see what you want, give us a call.

DISKS AND BOXES

25 bulk-packed DS/DD disks with w/p tabs and labels	ONLY £13.95
25 disks as above with 50 capacity lockable box	ONLY £22.95
25 disks as above with 100 capacity lockable box	ONLY £24.95
50 capacity lockable box	ONLY £10.95
100 capacity lockable box	ONLY £13.95

THE EXCELERATOR+

For COMMODORE Computers

Why buy a 1541C when you can buy this neat, reliable and compact drive for less money?

FEATURES

- Handles Disc Turbos
- Direct Drive Motor
- 1 Year Guarantee
- Ultra Compatible
- External 8/9 Switch
- Very Reliable
- Compact Size
- Very Quiet
- Doesn't Overheat
- 20% Faster



ULTRA
COMPATIBLE

Tests have shown the EXCELERATOR to be more compatible with protected software than the CBM 1541C. We can't find any software that it will not load.

TWO PURCHASE OPTIONS —

DON'T BUY A LUMBERING HIPPO (1541C)!

THE EXCELERATOR+ OFFERS MORE FOR LESS MONEY

SPECIAL
INTRODUCTORY
PRICE
ONLY
£159.95

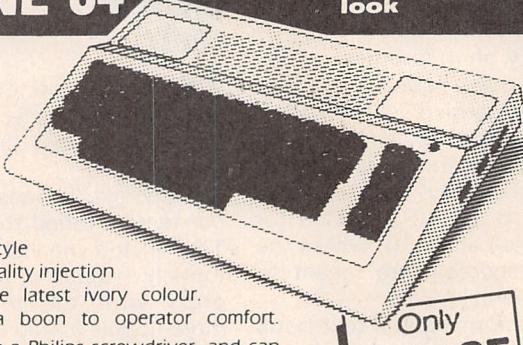
COMBINATION OFFER
EXCELERATOR+
and
FREEZE FRAME MK IV
ONLY £179.95

THE SLIMLINE '64

Give your '64 the modern look

A NEW IMAGE FOR
THAT FAVOURITE
COMPUTER

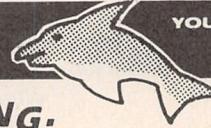
- Easy to Fit
- Lower key height



This modern case with its sleek style will transform your '64. The high quality injection mould is superbly finished in the latest ivory colour. The lower key height is also a boon to operator comfort. Fitting is very simple, requiring just a Philips screwdriver, and can be completed in less than 10 minutes. Stock now available so order for quick delivery.

Only
£19.95

DOLPHIN DOS



YOU WON'T
BELIEVE
YOUR EYES!

THE EFFECT IS STAGGERING.

Now established as THE parallel operating system for the 1541 disc drive. Hundreds of satisfied users include business, hobby, full-time programmers, and many leading software houses, including Gremlin Graphics, Domark, Superior, Alligata, Thalamus, Adventure International, and Software Projects.

The speed and efficiency is truly unbelievable, it is compatible with the vast majority of commercial software, speeding up both the loading of the program and of SEQ/REL files. (It is brilliant with Superbase, Easyscript, etc.) For non-compatible programs it can be completely switched out. It DOES NOT use a special disc format and your existing discs will be compatible.

FITTING

Fitting involves the insertion of two sub assembly circuit boards, one in the 1541 and one in the '64/128. These normally just plug in but on some '64s a small amount of soldering is necessary.

SOME OF THE FEATURES

- ★ 25x FASTER LOADING (PRG FILES)
- ★ 12x FASTER SAVING (PRG FILES)
- ★ 10x FASTER LOADING (SEQ FILES)
- ★ 8x FASTER SAVING (SEQ FILES)
- ★ 3x FASTER LOAD/SAVE (REL FILES)
- ★ E.G. LOAD 202 BLOCKS IN 5 SECS
- ★ EASY AND FAST DOS COMMANDS
- ★ USE 40 TRACKS FOR 749 BLOCKS
- ★ MONITOR BUILT IN
- ★ DRIVES CENTRONICS PRINTER
- ★ ENHANCED SCREEN EDITOR
- ★ EXTRA BASIC COMMANDS

(These figures do not allow for searching)

EXTRAS AVAILABLE ...

- Kernal for '128 in '128 mode
- User port expansion card (3 slot)
- Dolphin Copy (Whole disc in 18 secs and lightning fast file copier)
- Dolphin main board for second drive c/w lead

£9.95
£14.95
£7.95
£44.95



Best Hardware
Utility of year

If you require further information, please send SAE for fact sheet

Only
£69.95
Available for CBM 64,
or '128 in '64 mode,
please specify.

ORDERING INFORMATION

ALL PRICES INCLUDE VAT AND FREE DELIVERY WITHIN U.K. (Despatch within 24 hours whenever possible)

By Post

Send cheque, P.O., or ACCESS/VISA details to our Evesham address

HOW TO ORDER

Call our Evesham branch and quote your ACCESS/VISA details

By Phone

TRADE ENQUIRIES WELCOME

EVESHAM MICROS, 63 BRIDGE ST, EVESHAM, WORCS. WR11 4SF

CALLERS WELCOME

Tel: 0386 41989 Telex: 333294

Also at: 1756 Pershore Road, Cotteridge, Birmingham B30 3BH. Tel: 021 458 4564

All items subject to availability, E.O.E. Orders from Government and Educational departments welcome.

Overseas Orders: Within Europe, please send advertised price. Outside Europe, add £2.00 for Air Mail



Pleasant surprises

Integrated packages are becoming increasingly important, causing the traditional margins between different business utilities to disappear. The thinking is that you shouldn't have to leave your current application just to perform a different, simple and frequently necessary task. Databases need to have text editing facilities to produce reports and form letters; word processors need a calculator or the ability to look up names and addresses; spreadsheets, often seen as the most specialist and least accessible of the big three business software tools, are also becoming the heart of integrated packages (including the built-in software of Sinclair's new portable).

Matrix is a menu driven spreadsheet program that has an integrated text editor capable of mail merge, a calculator, and a graph drawing utility.

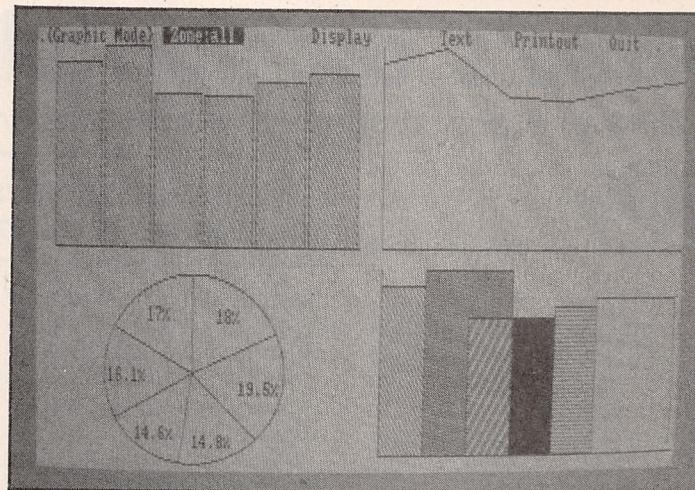
The spreadsheet itself is fairly standard: it has a moderately useful, but not vast, range of inbuilt functions. Cells can hold numeric, text or formula data and it allows relative and absolute cell referencing in the latter. They can also be named, which makes their use in formulae much easier to remember.

Defined blocks can be moved, copied, saved to disc or viewed in isolation. However, if a block is moved any formula adjustment required has to be done manually. Data in specified rows, columns or blocks can be sorted alphabetically or by numeric value, in ascending or descending order.

Numbers can be displayed in integer or decimal formats, with the latter to a specified range of decimal places. Units can be added; such as 'Kg', 'p' or 'cm'. They can also be nominated as degrees or radians for geometric or engineering work. The final format is a bar type which displays small numbers as a simple form of graph.

The calculator works on a notepad-like window so that previous calculations can be viewed. The calculation can include values taken from worksheet cells.

The notebook is a primitive but useful text editor. It lacks on-screen formatting, but text is tidied up as printed. You can send any Ascii code or printer control code by specifying them exactly which is a flexible if unfriendly method of controlling the text output (keep your printer manual to hand). You can also extract data from specified



Matrix: drawing up the graphs

spreadsheet cells for inclusion in the text. If a range is specified instead of a cell, several copies are printed giving a mail merge or label printing facility. Page width and depth can, of course, be specified. It is also possible to 'print to disc' to produce plain Ascii files of the spreadsheet or notebook.

The graphs options are again reasonable: pie, line, bar and cumulative bar charts can be displayed. They lack auto scaling or the ability to superimpose plots but you can add text or legends and superimpose a grid. Up to four graphs can be displayed on screen at once, but one drawback is that only Epson compatible printers can be used.

No major advances in pro-

gramming technique are required for integrated packages: the real limitation is the available memory size. So they are rare, or usually cheezy, on small home micros. *Matrix* therefore came as a pleasant surprise. It wouldn't win any prizes at the PC User show but it certainly has some innovative and useful features and, if your ambitions are not too great, it provides a cheap method of buying several utilities together.

Tony Kendle

Program	Matrix	Micro
Amstrad CPC	Price £29.95 tape, £34.95 disc	
Supplier	Audiogenic Software Ltd., PO Box 88, Reading, Berks.	

A handy and valuable discovery

Siren Software has produced some of the most valuable disc utility software for the Amstrad, and *Handyman* certainly does not let the side down.

There are several components to the program. The least exciting is Filemate which will read disc-files to screen in Ascii, Ascii with line numbers, or Hex and Ascii form. This is complemented by a disc file editor which searches for specified data.

For the lazy, or those with a desperate need to be user friendly, there is a utility designed to allow you to quickly

create menus for the loading of files from your discs. Transfile is a utility that lets you transfer files from one disc to another – like *Pip* does under CP/M (but with the added ability to read files from formats not normally recognisable by the CPC).

Disc release and disc restore are designed to copy entire discs over on to cassette tape. This is intended to allow you to archive files that you do not use very often, thus releasing the valuable disc space. There is the obvious advantage that you do not have to laboriously copy

every file one by one but the really clever part is that all details of the disc, such as the format, can be stored and reproduced exactly as they were on the original. Even many dodgy format discs can be backed up in this way.

The best utility to my mind allows to temporarily change the workings of the disc drive to give you a welcome 207K of free space rather than the standard maximum of 178K. With the proviso that these discs cannot be used under CP/M, or read by any other Amstrad machine that doesn't have access to *Handyman*, this must be an excellent idea.

Discovery + is a tape to disc transfer program that must be the current state of the art in this field, being able to tackle almost all of the strange loading systems seen on current

games. Transferring software in this way is not illegal as long as it is intended purely for your own use.

I believe that anyone who has invested in a costly disc drive can not be criticised for resenting the need to go back to slow, unreliable cassette tape. Many anti-piracy devices exist that can be used instead of dodgy loaders, such as *Lenslok* or some form of random documentation check, and these are really the only protection against tape to tape piracy anyway.

Tony Kendle

Program	Handyman and Discovery +	Micro
Amstrad CPC	Price £12.99 and £14.99	
Supplier	Siren Software, Trafford Technology Centre, 43 Elsinore Road, Manchester.	

Who's the spriteliest of them all?

Duncan Evans compares two sprite designer products

Designing sprites for the latest arcade mega blast production is usually an exercise in patience and dogged application, involving copious amounts of graph paper. What is obviously required, then, is a software package to take all the hard work out of the task, by not only allowing you to design multi-coloured sprites, but also allowing for some measure of animation in order to test out how the sprites will look when being used within your own programs.

Pro Sprite Designer from Eidersoft and *The Sprite Construction Set* from Microdeal both offer just those facilities, but with differing degrees of success as will be made clear in this comparative review of both products.

Pro Sprite Designer

Eidersoft's package comes in

"What is required is a product to take all the hard work out of designing sprites"

the usual triangular, and none too sturdy, box, complete with disc and a very small 60 page manual (obviously so because anything bigger wouldn't fit in).

Once past the loading screen of a cutaway view of an engine, which can be impressively animated with a separate program on the disc, the screen display divides into a large 32 by 22 pixel grid on the left, and a control panel on the right containing icons representing the various functions and options available.

There are 30 icons, three digital displays and a picture window in the control panel, so reference to the manual is essential until familiarisation is complete. To begin creating a sprite, you simply select a colour from the palette

above the graph area, then use the left hand mouse button to fill in the pixels in the grid. While you're doing this your sprite is duplicated in the picture window.

That's all there is to designing a single frame sprite. The full power of the features on offer only become available if you want to animate your sprite by letting it have more than one frame. In fact a single sprite can have over 700 different frames. Obviously this is a bit of overkill on Eidersoft's part, but it does illustrate that there are more uses to the program than simply designing intergalactic starships.

If you use a number of the sprites adjacently and with many frames each, you can set up some very impressive

demos. The only penalty for these multi-dimensional objects is, of course, memory, each frame consuming an extra 360 bytes.

Creating a second, or further, frame to a sprite is quite simple. One click on the frame forward icon brings up a fresh canvas in the picture window and design grid, ready to be used. Assuming you want only minor alterations made to the design in the previous frame, then either the frame copy or frame overlay icon will be of use. One copies the contents of a specified frame to the target frame, overwriting whatever was previously there, while the other simply overlays the vein you can also swap frames around, rearranging their display order.

Other options for manipulating the frame design include four way scrolling in case your image is incorrectly positioned, vertical and hori-

**BUY ONE
GET ONE FREE!!!**

**BUY ONE TITLE AT THE ADVERTISED PRICE AND
MAKE ANOTHER SELECTION COMPLETELY FREE OF CHARGE!!**



ACE...the air combat flight simulator. Zzap! 64 and CCI Flight Simulator of the Year. Need we say more?

SKY RUNNER...An excellent and entertaining follow up to ACE' - Computer and Video Games. You play the part of future drug buster.

DISK 50...An outstanding compilation of 50 - yes 50 - games on one disk.

Also available **CASSETTE 50**...Same great value. Same great offer.

Insert the number you require in the boxes below to indicate the games of your choice.

Remember...Buy one cassette - get one cassette free. Buy one disk - get one disk free.

Buy two - get two free!!!!

ALL CASSETTE GAMES

£9.95

ALL DISK GAMES

£14.95



Allow 28 days for delivery
I enclose a cheque/postal order for £..... made payable to Cascade Games Ltd.
or through any Post Office by TRANSCASH (Giro No. 655 6655)
For even faster ordering when charging to ACCESS, BARCLAYCARD, VISA,
AMERICAN EXPRESS or DINERS CLUB use our 24 hour express order service
by telephoning 0423 504663 Be sure to quote Ref. PCW or by post tick the appropriate Credit/Charge Card and enter number here

TITLE	DISK	CASS.	COMM.	SPECTRUM	AMSTRAD	PRICE
ACE					★	£
SKY RUNNER					★	£
DISK 50		★		★		£
CASSETTE 50	★					£
					TOTAL	£

* INDICATES NOT AVAILABLE IN THIS FORMAT

NAME _____

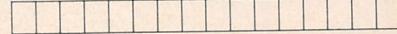
ADDRESS _____

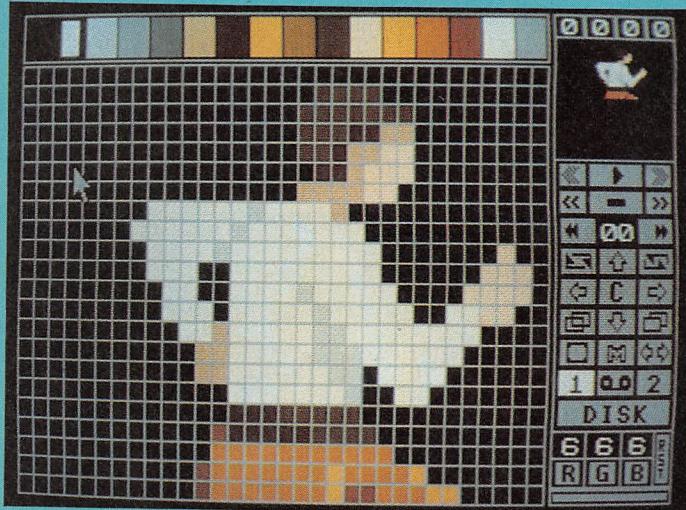
POSTCODE _____

COUNTRY _____



Cascade Games Ltd., Harrogate, HG1 5BG, England.





horizontal inversion of the image, and clearing it altogether.

Fast forward and reverse, as well as normal play options, not only allow you to watch the frames in sequence (and you can specify the delay between the frames changing to suit), but also allow you to search rapidly for a specific frame that you wished to alter. This is something that you cannot do with Microdeal's product which sports crude viewing options in comparison.

As virtually all sprites are designed as moving objects, displaying a sprite running through its various frames whilst moving horizontally or vertically would be very useful if not essential. *Pro Sprite* lets you do this, the *Construction Kit* doesn't.

Selecting the 'M' icon clears the pixel grid from the left side of the screen and replaces it with a blank area with the animation options along the bottom. You can set the speed of the sprite moving about and its direction as well as initiating a loop sequence to save setting it all rolling again.

It doesn't really matter if the sprite production facilities offered are marvellous if it is nigh on impossible to incorporate the finished designs in your own programs. After saving the sprites to disc, the vital question of 'what now?' looms. Thankfully *Pro Sprite* makes a good attempt doing the business here and if anything, it's at this point that the gulf between this and *Construction Kit* widens irretrievably.

Using *Pro Sprite* the sprite data can be saved on disc in a format which can be incorpo-

rated into ST Basic, Fast Basic, Assembler and C programs respectively.

It should be noted that this is not a sprite movement and manipulation package but, the data files do contain routines for transferring the

"The method of drawing the sprites in the first place is exactly the same with both products, except that Microdeal's is less responsive"

sprites to the screen. However, in order to utilise these routines you must be fairly proficient in whichever language you are using as they are not the last word in user-friendliness. Personally I would have liked to have seen a complimentary program on the disc that simplified the use of sprites within your own programs so that even newcomers to programming could take advantage of the designs they had created.

The Sprite Construction Kit

The Microdeal offering is packaged in a video style box and comes with an eight page manual. Even if the manual is 2.5 times the size of Eidersoft's, eight pages is still woefully inadequate.

The screen displayed is arranged thus: the zoom and edit screen on the left, palette above and drops down menus above that, an actual size display (called the Actual Window, logically enough), of

the sprite being edited to the right, below that a clipboard and on the far right a sliding scale to set the delay between frames when a sprite is run through its animation sequence.

The size of sprite on offer is quite large, facilitating the animation of character sequences as opposed to standard sprites. Because the sprite is so large there are two modes of operation in *Construction Kit*. The first is the Level Actual Window while displaying a close up of only one sixth in the Zoom Window.

The second is the Object mode whereby you can edit and zoom in on one particular section of the sprite, want to swap sections (sixths) of the sprite around in the Actual Window, which is all done very easily.

The method of drawing the

When setting up the animation sequence, you can specify which order the frames are shown in first and use the sliding control to set the inter-frame delay. Unfortunately you cannot easily step through the frames quickly to look for a specific frame or to see how things are progressing. You can go to a specific frame but this involves use of a menu and pressing keys.

As I've already stated, the crunch comes when you want to use the sprite designed in your own program. *Construction Kit* is a bit of a let down, comparatively, here as it only provides source files for C or Assembler programs and gives no information on the resultant file either.

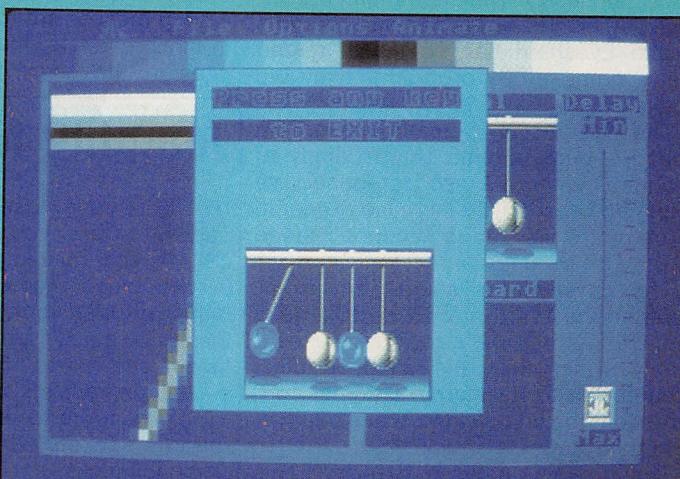
The Conclusion

Despite a few minor criticisms with *Pro Sprite Designer*, such as icons not fading out on the control panel when you can't use them, the product is substantially better than *Sprite Construction Kit*.

Duncan Evans

Product *Pro Sprite Designer* **Micro** Atari ST **Price** £39.95 **Supplier** Eidersoft Software, The Office, Hall Farm, N. Ockendon, Upminster, Essex RM14 3QH.

Product *Sprite Construction Kit* **Micro** Atari ST **Price** £19.95 **Supplier** Microdeal Ltd, Box 68, St Austell, Cornwall PL25 4YB.



In line for an update

Chris Jenkins looks at two ways to upgrade your Commodore 64

Evesham Micros' contributions to the world of Commodore computing become ever more imaginative and valuable. Of the latest products released, one is largely cosmetic but well worth the money, while the other seems like the answer to the heartfelt prayers of many Commodore 64 users.

The Slimline 64 replacement case scores highly for snob-value. As you will know, the aging 64 was recently replaced by the 64C; exactly the same machine electronically, but rehoused in a smart, modern, wedge-shaped case similar to that of the C128.

The Slimline is just such a case, very similar to the style of the 64C. Fitting presents no problems; just unscrew the old case, release the keyboard and main PCB, then refit into the new case, making sure that the power LED, joystick sockets and rear ports engage properly in the slots.

The wedge-shape of the Slimline allows you to rest your wrists on the case while typing, so it's a good buy for word-processor users. Also included are holes for a reset switch or Dolphin DOS switch. Apart from that the only real value is aesthetic, but I think that's reason enough to treat yourself to what will look like a new computer.

More radical is the Excelerator+ (sic) floppy disc drive. For years, Commodore owners have been crying out for a 64-compatible 5½ inch disc drive which is cheaper, smaller, and if possible faster than the despised 1541. Although there have been some attempts made, notably the Enhancer 2000 at around £150 with word processor, the Excelerator+ is the smallest alternative drive to claim complete software compatibility – the original Enhancer could not cope with fast-loaders, although later models were improved.

The Excelerator+, though, seems to cope faultlessly with commercial software, Ascii files or backed-up programs – and Evesham has obviously tested many times more programs than we could.

The claimed 25 percent increase in speed, though, seems only to apply to programs without a disc fast-loader; we found no other speed increase except in formatting a disc, at 55 seconds instead of the 1541's 87.

The Excelerator+ seems tiny compared to the 1541, at 268 x 150 x 47.5 mm, almost half the size. This makes it barely wider than the 5½ inch disc, though due to its sturdy all-metal construction, the unit weighs in at a relatively hefty 2.8 Kg.

The power supply is external. This



helps in keeping down the size of the drive, and also reduces overheating problems. The power supply plugs into the back of the unit, next to the two serial ports. Also on the back is the on/off switch.

Beneath the unit are two dip switches which allow the device number to be changed to 8, 9, 10 or 11 without resorting to cutting PCB tracks or using software methods, as you must with the 1541.

There's a single operating LED to the left of the disc slot; this is normally green, and turns red or flashes during data transmission or in case of error. The disc mechanism is similar to that of the 1541C, with a twisting latch, and no spring mechanism to eject the disc.

In all respects, the Excalibrator+ operates in the same way as the 1541,

offering relative, sequential and random filing, as well as the whole range of Commodore DOS functions. Although this doesn't overcome the inherent operating difficulties of Commodore DOS, the reasonable price (£40 less than the 1541) and increased convenience of the Excalibrator+ make it a very attractive purchase. Packaged with the Freeze Frame Mark 4 transfer cartridge, this could be the ideal incentive for any tape user to upgrade to disc.

Hardware Slimline replacement case, £19.95; Excalibrator+ disc drive, £159.95; Excalibrator+ and Freeze Frame Mark 4, £179.95 **Micro** Commodore 64 **Supplier** Evesham Micros, 63 Bridge Street, Evesham, Worcs WR11 4SF, 0386 41989.

Jumping for Joycon

Has your closest friend got BO? If so and you're not too keen on sharing a keyboard with them in a two player game then any product which enables you to use a joystick each has to be a good idea. Joycon, from Frel is one such piece of hardware.

Joycon consists simply of a 9-pin Din plug which fits to your CPC and two 9-pin Din sockets which accept standard Atari joysticks.

The price is a very reasonable fiver and better still the unit works as it should. We tested Joycon with a number of games and each gave a perfectly reasonable response with both joysticks attached. What more could you ask for?

Duncan Evans

Product Joycon **Micro** Amstrad CPC **Price** £4.95 **Supplier** Frel Ltd, Electronic Design & Marketing, 1 Hockeys Mill, Temeside, Ludlow, Shropshire SY8 1PD.

Toning down your Amstrad

David Wallin explains how to cut down on the glaringly obvious

The Alpha Electronics screen filter for the Amstrad PCW series is one of a new type which uses a very fine fibre mesh rather than glass or perspex. The main advantage of this is that it is far cheaper than a glass one.

Only a few years ago, a screen filter would set you back £50 to £150. Now, the mesh technology has brought the price down to the £10 to £20 bracket – ideal for the home user.

What does a screen filter do? Mainly it reduces reflections and 'glare' produced by direct light shining on the screen. It also blackens the black on the screen. Due to the lack of reflections, the colours tend to be a bit darker, something which I have grown to like.

Filters generally come in two styles. There are the ones which 'stick' around the screen on the plastic of the monitor and those which fit almost flush to the screen itself. Alpha's is the former type,

"Due to the lack of reflections, the colours tend to be a bit darker"

so you can 'see' it's there and its plastic surround is moulded specially to fit the PCWs, in the slightly darker colour of the 8512. It is almost weightless and secured by four small black velcro strips.

Naturally, you can't expect quite the same quality or strength from a mesh filter as from a glass one, but I find the Alpha Electronics' one to be of excellent quality. Put simply, after about a month of using the filter I can't bear to use my 8256 without it on.

I have, however, found two problems with it. The first is that I keep forgetting it's there! This means that every time I

point at the screen I push the filter and almost break it.

The other problem is that the lower part of the filter does 'shine' and the mesh shows at times. This is only visible when you are very close to the screen and a bright light is shining very near to the filter, but not pointing directly at it – odd.

A bit expensive at £17.95 perhaps, but it does look in place on the 8256 (even more so on the 8512); more than most other filters. A luxury maybe, but if you use your computer regularly it should become invaluable.

Hardware Alpha Screen Filter Micro
PCW 8256/8512 Price £17.95
Supplier Alpha Electronics, Unit 7, Maple House, 97 Ewell Road, Surbiton, Surrey KT6 6AH.

Special offer

30% off Spectrum Teletext Adaptors!!!

Following the Chancellor's well publicised 'giveaway' budget, the corporate body of *Popular Computing Weekly* (in conjunction with Volex Electronics) was spurred into action and so has come up with a fantastic deal which, while not guaranteeing to refloat the economy and get three million off the dole, will certainly keep you better informed.

What can no well-heeled exec be without nowadays? What item of electronic equipment will you see on every

wine bar table across the City? Right, a car phone – but seeing as that hasn't got anything to do with computers, wouldn't you rather be the proud owner of a Teletext adaptor?

This item of equipment, connected up to your Spectrum (48K only) and your telly, will plug you into a whole new world of Teletext information – the Oracle and Ceefax services run by the BBC and ITV.

On offer is the Volex TTX 2000S, normally retailing at £64.99. We are offering it (in a limited offer of 150 units) for only £45! £20.00 off! Can you resist it?

If not, collect the two tokens (one published this week, one next), and send them off with the form below, together with your remittance to Volex Electronics at Volex House, Lissadel St, Salford, M6 6AP.

Please send me a Volex 2000S Teletext adaptor for my 48K Spectrum – I enclose a cheque/Access/Visa authorisation (made payable to Volex Electronics) to the value of £45.00 including VAT and P&P together with two Special Offer tokens.

Name.....

Address.....

Access/Visa Number.....

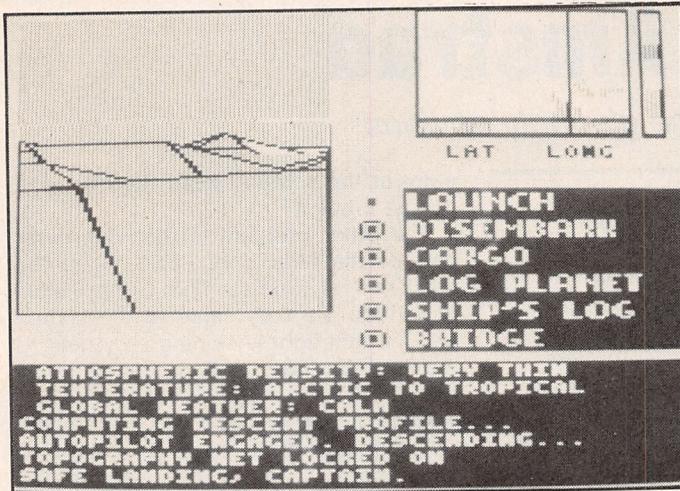
Signed.....

Please allow 28 days for delivery. Offer closes May 1.

**Popular Computing Weekly/
 Volex Electronics special
 Teletext Adaptor offer
 Token No. 1**



The TTX 2000S. It is. Are you?



Every once in a while a game comes along for a certain computer that fills right-thinking members of society with a desire for that machine.

Elite on the BBC was one, *Gunship* on the C64 another, *Flight Simulator II* on the ST another.

The IBM PC hardly figures on anybody's list as a highly desirable games machine but now the unthinkable has happened: the PC game has arrived.

"Starflight puts an entire galaxy into your PC, and the intelligence, imagination, humour and loving attention to detail combine to make this a truly great piece of software"

The product in question is *Starflight*, from Electronic Arts via Ariolasoft. Unless you're terminally brain-dead, it is one of the most engrossing and impressive games on any computer.

Anyone who owns an Amstrad PC1512, or any of the other clones, should buy this game, and it may be the best argument for buying an IBM emulator for machines like the Atari ST or the Amiga.

It won't, it must be admitted immediately, appeal to fans of the "kill, kill, kill" school of thought.

The scenario is this: your home sun is about to go nova. A team of exploratory starships is sent forth to scour the galaxy looking for suitable worlds to colonise.

To start with you're given a minimally equipped ship, and enough money to train a crew. After that you've got to earn a living.

Not startlingly original, but it's far from the most hackneyed idea. What makes *Starflight* exceptional is the care and attention that has gone into making this a vast epic.

The galaxy contains hundreds of stars, each with an average of four planets.

And each planet is uniquely generated by the computer as

A galaxy awaits in your IBM

taining valuable archaeological items.

There are also a number of intelligent, space-faring races who you'll encounter on your travels. Some are friendly, some are hostile, but if handled properly all will impart useful information.

One race are religious fanatics: you'll be greeted by the message "Repent, air-breathers, repent. Lower your shields and be saved." In cases like this you'll be grateful for better shields, good armour, first-class missiles and lasers, and fast engines to get you out of trouble in a hurry.

In addition to the humdrum affairs of survival and grubbing a living, there are deeper problems to be solved: who were the Ancients, and what is the menacing Crystal Planet?

Given that we're talking IBM PCs, you'll appreciate that the graphics are not astounding, and the sound effects rather poor. But given the limitations of the machine,

the programmers have done an amazing job (the fractal generator used to create the planets is very impressive).

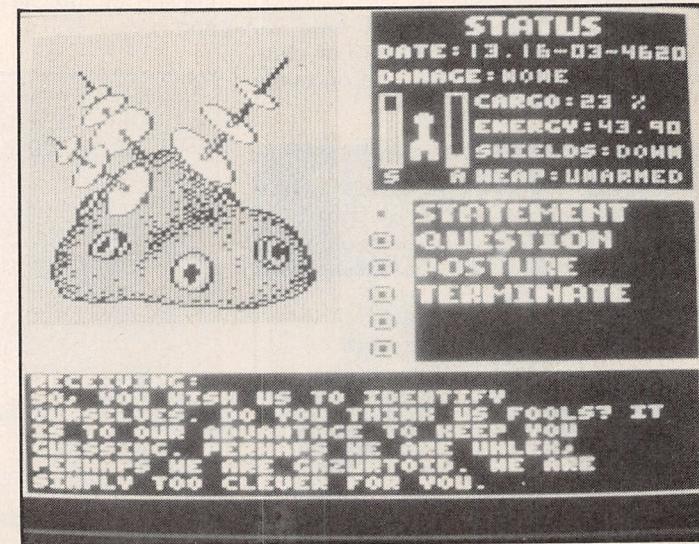
But these problems pale into insignificance against the good points. *Starflight* puts an entire galaxy into your PC, and the intelligence, imagination, humour and loving attention to detail combine to make this one of the truly great pieces of software.

How to get hold of a copy? That's going to be difficult for a month or so while the Ariolasoft (who have sold all their existing stocks of *Starflight*) agreement with Electronic Arts lapses and EA actually get their independent act together in this country.

But whatever, that wait is going to be well worth it.

Popular Appeal ♦♦♦♦♦
Peter Worlock

Program *Starflight Micro*
IBM PC and Compatibles
Price £24.95 (from Ariolasoft, EA price as yet undecided)
Supplier Electronic Arts.



Waging war

The ST has not been particularly well served on the scrolling shoot 'em up front, previous efforts being fairly feeble. Things began to look up with *Typhoon*, an adequate shooter with tiny sprites and peculiar music and effects. Now, the latest and greatest, to date, comes in the form of *Plutos*, from MicroValue, Tynesoft's budget ST label.

In this exercise in mass destruction your reasonably sized ship can fire up to four double sized bolts of... whatever it is that these ships fire, at the swirling hordes of small sprites that dance and cavort across the screen.

While the flying foe represents one hazard, another comes to the fore in the shape of emplacements on the

ground which range from solid formations to crash into, to beserker extractor fans spewing a hail of missiles.

Also on the ground are buildings and bonus targets worth vast amounts of points, and also the occasional blob which may or may not contain hidden lives (of *Lightforce*). To finish off a level you must wage war against a grim looking face with Basilisk eyes and venomous teeth.

The sound effects are somewhat rudimentary and there's no music to enjoy or complain about, but the action does get very thick if not so fast later on. Around level nine the screen is simply awash with sprites making survival a matter for the gods.

Entertaining though it may



be initially, the one player game soon becomes tiresome. However, when two players are involved (both ships appearing on screen simultaneously) the battle becomes a personal challenge and sustains the excitement.

Plutos is certainly the best 2D shoot 'em up on the ST so far, but watch out for Micro-

deal's *Goldrunner*.

Popular Appeal **Duncan Evans**

Program *Plutos* **Micro**
Atari ST **Price** £14.95
Supplier Tynesoft, Addison Industrial Estate, Blaydon, Tyne and Wear NE21 4TE.

Pretender to the crown

I don't think the most generous person in the world would call Mike Singleton prolific, but perhaps with two mega-hits like *Lords of Midnight* and *Doomdark's Revenge*, you don't have to be.

Still, it's been well over a year since his last commercial release – and that's a long time to live on a reputation – hence the great interest in *Throne of Fire* from Melbourne House.

Mike wrote the scenario and design for this game, with the coding and graphics being done by Consult Computer Systems. The question is, has the master lost his touch?

You certainly couldn't put *Throne of Fire* in the same 'classic' league as any of his previous offerings – the design just doesn't have the same breadth of scope even though it has been implemented well on to the Spectrum.

The scene is set in the burning citadel, a circular royal fortress built around the cone of a volcano – obviously one of the earlier experiments in central heating – with three princes (plus attendant cohorts) battling it out for the recently vacated throne.

You take the role of one would-be king, with the com-

puter controlling either both or just a single remaining prince, depending on whether you are playing one or two players. Your prince and his forces (you can only control one man at a time) move through the castle in an at-

guard and the opposing princes are in big trouble. Kill the other princes and the game is won.

The action itself is played out in very classy style on a vertically split screen – one for each player.

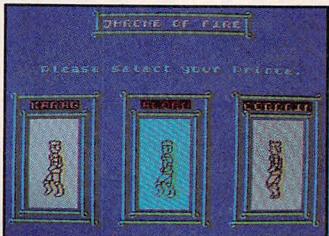
"The action itself is played out in very classy style on a vertically split screen"

tempt to gain control of the throne room (additionally defended by the initially neutral king's guard).

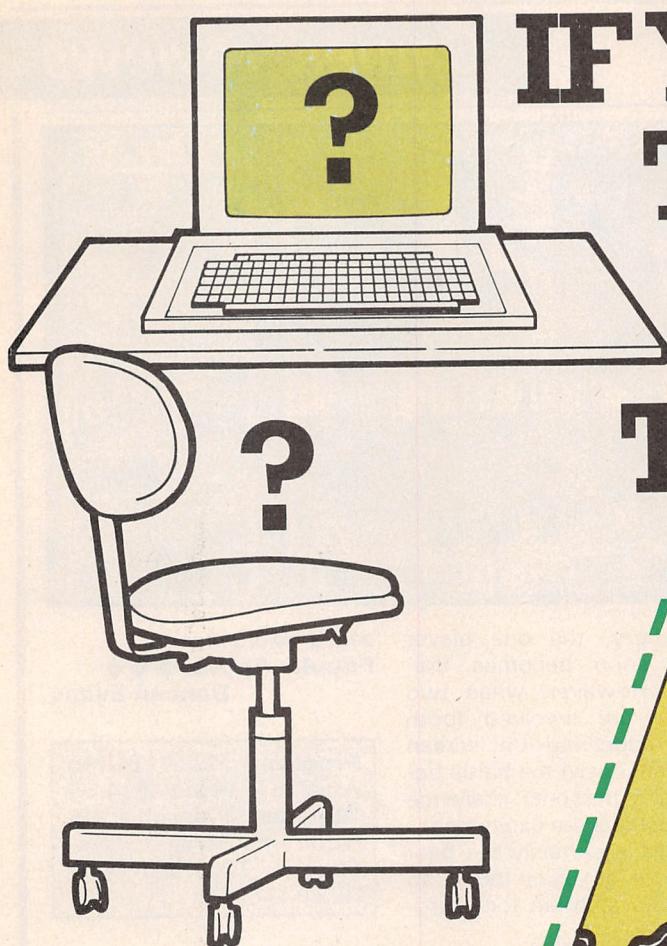
Once you have done this, the other players lose all control of their men-at-arms, you gain control of the king's

This is all very clever, but the bottom line is that the one player game is easy to beat and while the two player game is fun, design flaws mean it lacks the depth challenge of the author's previous work.

Popular Appeal **John Cook**



Program *Throne of Fire* **Micro** Spectrum **Price** £8.95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston Upon Thames, Surrey KT1 4DB.



IF YOU CAN FILL THESE SPACES

IN ANY OF THESE PLACES



WE ALREADY FILL THESE SPACES



We are looking for enthusiastic, bright individuals to add to our team

of management professionals and talented programmers to advance even further our position as the UK's premier software development house. You'll recognise the product successes that give us the solid foundation and financial structure to properly reward the efforts of our programmers and back their products to maximum success, but what you may not realise is the depth of expertise we include in our 30 strong team - music and animation being only two of the specialisms available "in house", state of the art equipment being included as essential tools.

Now we are propelling our successes to even greater heights not only by acquiring exciting new licences for smash hit products but by opening new software development offices (Canada and USA included - so start packing your bags!!) to increase the pool of products that will elevate the name of Gremlin from the UK's No. 1 to World No. 1.

If you have the talent, come in from the cold and join a team of professionals that's geared to not just get the best from you, but to give you back much, much more.

SO FILL THIS SPACE NOW!!



Name _____

Address _____

Previous Projects _____

Telephone _____

Mole-playing games

Monty Mole, you might remember, was last seen on the run, having been viciously imprisoned for 'borrowing' coal to keep warm.

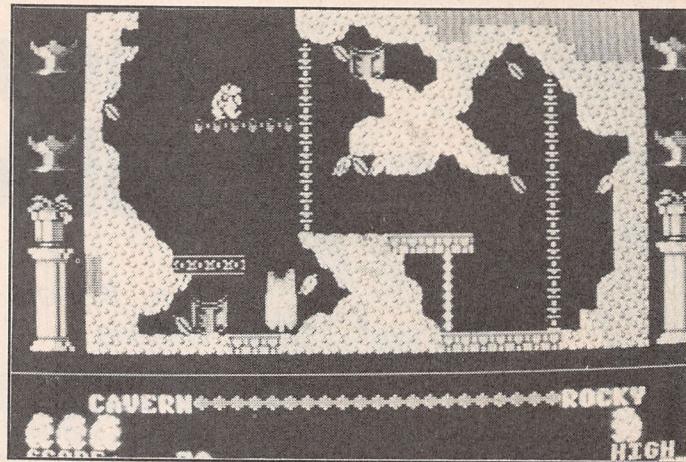
Now he's lying low in Gibraltar – but there's no peace for the wicked, and as Inter-mole are hot on his furry little tail, he must flee across Europe, collecting enough money on the way to buy the little-known Greek island of Montos so as he can set up his very own Costa del Crime.

That's the plot then, but does the word 'collecting' ring any bells? If so, you

won't be surprised that you must also dodge various animated single colour sprites, jump off sundry platforms and climb the odd ladder or two in your bid to cheat the extradition laws.

Having said that, *Auf Wiedersehen Monty* is one of the classiest of this particular games genre.

Good music and sound effects, some excellent puzzles, leaps that must be timed to the split second and objects that have unpredictable effects make it an enjoyable romp and addictive in the way these things often are.



Sure, it's not bristling with exciting new game or programming concepts, but if you are of the school of thought that believes there's many a good tune played on an old fiddle, you'll like this one. *Auf Wiedersehen* cannot be described as a Strad, but at least it's in tune.

Popular Appeal ♦♦♦
John Cook

Program *Auf Wiedersehen Monty* **Micro** Commodore 64 **Price** £9.99 **Supplier** Gremlin Graphics, Alpha House, 10 Carver St, Sheffield S1 4FS.

Steve Davis dips into pool

For those of you reading in black and white, the blue ball is the object directly behind the yellow. On the PCW, however, it's much easier to work things out. They're all green.

Yes, Steve Davis has finally made it on to the PCW machines and much to the delight of many a day-dreaming office worker, I'll be bound. Booted up via CP/M, the game is up and running in a matter of seconds (ah... the joys of a disc system) giving you not just the option to play snooker, but apparently, young Stevie has learned to play pool and billiards as well.

Choose the game, select one or two players, and it's off. The game has been converted reasonably well, with no major control changes for the versions on other formats. Play couldn't be simpler – cursor keys are used throughout (in conjunction with *Return*) as you first place a cursor where you want to aim the ball, then decide the power of the shot, finally finishing the business off with a touch of spin.

The motion algorithms and animation of the ball themselves are adequate, rather than excellent, but have no

major faults. The problem with only having the single colour has been got round by shading the reds and numbering the colours – not amazingly attractive, but it works.

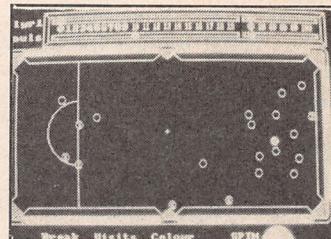
As with all snooker-type games, the one player option is not actually against the computer itself, but is more a practice option.

Still, if you feel the urge to

rack up a few frames on the PCW, cue here.

Popular Appeal ♦♦♦
John Cook

Program *Steve Davis Snooker* **Micro** Amstrad PCW 8256/8512 **Price** £14.95 **Supplier** CDS Software, CDS House, Beckett Road, Doncaster House, Doncaster.



Steve Davis Snooker: adding pad and billiards to the repertoire

The best collection on the BBC

Old games never die; they simply turn up a couple of years later on a compilation cassette. The company responsible this time is Superior Software which is issuing its back catalogue as two collections. Volume one is fairly dire so let's look at volume two.

For a tenner you get *Overdrive*, *Crazy Painter*, *Battle Tank*, *Missile Strike*, *Space Pilot*, *Deathstar*, *Repton 2* and the previously unreleased *Kix*. As you may have perceived, all the above bar *Repton 2* are versions of actual arcade games, albeit old ones.

Of the eight games only *Overdrive* is actually bad, featuring, as it does, a Roman road to drive down (hardly

Pole Position), *Crazy Painter*, *Kix* and *Space Pilot* are all fairly simple and provide a measure of enjoyment, while *Battle Tank* is a cut down version of *Battlezone* which becomes quite tedious after a very short while.

Missile Strike is an entertaining *Missile Command* implementation where you defend your cities from incoming missiles and satellites. It looks its age but is still good fun nevertheless.

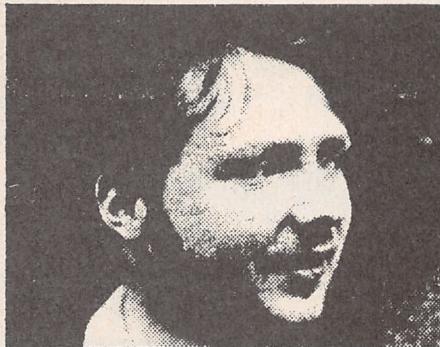
Finally, the best two games on the compilation are undoubtedly *Repton 2* and *Deathstar*. The latter is based on *Sinistar* and features four way scrolling over a starfield, mining asteroids for bombs and a frantic chase involving

the *Deathstar* when its minions have finished building it.

Repton 2 is one of the best games ever produced on the BBC. Not because of the graphics, scrolling or sound, none of which are outstanding, but from a gameplay and addictiveness viewpoint. If you haven't already got *Repton 2*, then this collection represents excellent value for money.

Popular Appeal ♦♦♦
Duncan Evans

Program *Superior Collection Volume 2* **Micro** BBC B/Master **Price** £9.95 (cassette), £11.95 (disc) **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.



The return to that golden oldie

Tony Kindle passes along an infinite lives poke for Galaxia

I want to send my congratulations to Andrew Hill of Blaina in Gwent, who has won a genuine *Moon Cresta* arcade machine from Incentive Software for his excellent performance on the game. This was the second machine given away by Incentive, the first for those who bought early releases of the game on Spectrum and Commodore, the second to allow late-comers with versions on Amstrad and BBC to try their hand.

The question is, what is Incentive going to do next? It is, understandably, concentrating most of its efforts in promoting its excellent *Graphic Adventure Creator*, and its products, but it did such a good job with the *Moon Cresta* conversions that I don't think we should let them rest on their laurels. More arcade games please, Incentive!

The cheat routine for this week is an infinite lives poke for the Amsoft game *Galaxia*. This was one of several cheats sent in by Leslie Cowley for Amstrad CPC games. We printed the bulk of them a few weeks ago, but this particular routine was too long to include at the time.

Galaxia was one of the very first games ever released for the CPC, and I remember that seeing it running in crystal clear colour on the supplied monitor was one of the major points that sold the computer to me. Unfortunately I have to admit that only about one in ten of the programs released since have come close to living up to that first promise and I still find that *Galaxia* lies near the top of my games pile. Now thanks to Leslie I can really show those flying diamonds what for.

It seems appropriate just to quickly remind everyone of one of the common problems that arise with hacking Amstrad games. Locomotive, in its wisdom, provided the option for users to protect their Basic programs such that they can only be run, they cannot be loaded, merged, or broken into and listed.

Now as it turns out, breaking this protection is a relatively simple process for a good hacker. It is therefore common for people to send in Amstrad pokes that say something like 'Add this line to the first Basic program' or 'Edit the Basic loader program to say' etc. Unfortunately for beginners, getting access to the lines of Basic can be next to impossible.

The alternative approach is to completely replace the existing Basic loader, which is normally quite short, with an exact duplicate routine of your own, but with the appropriate pokes inserted. This new routine can itself do the job of loading and running the main machine code of the program, ignoring the original Basic loader when it finds it.

This is the system Leslie has used for this cheat routine, and I must repeat that if anyone has found some pokes for Amstrad games, please could they have a thought for novice programmers and make the cheats as easy and as obvious to use as possible.

```

10 CALL &BB00:CALL &BB4E:CALL &BBBA:CALL
&BBFF:CALL &BCA7:CALL &BC8
20 MEMORY &32FF
30 CLS:LOCATE 10,10:PRINT "Loading Please
Wait":count=0
40 FOR i=1 TO 189:READ num:count=count+num-
:POKE &6FFF+i,num:NEXT
50 IF count<>21825 THEN PRINT "Error in data
please check":STOP
60 CALL &70B4
70 ENT -1,=40,1,2,1,4,=30,1,2,-1,4
80 ENT -2,=62,1,1,1,4,=94,1,1,-1,4
90 ENT -3,5,4,1,17,-4,1,15,4,1,6,-4,1,3,4,1
100 ENT -4,5,4,1,5,-4,1
110 ENT -5,=200,1,20,4,1,10,-4,1,20,4,1,
10,-4,1
120 ENT 6,100,4,1
130 ENT 7,100,-4,1

```

```

140 ENT -8,20,-1,2,1,7,1
150 ENT -9,6,1,1,6,-2,1,6,3,1,6,-4,1,6,2,1
160 ENT 10,17,-1,1
170 ENT -11,3,2,1,5,-2,1
180 ENT -12,=90,1,20,-2,1
190 ENT -13,5,1,2,10,-1,2,10,1,1,20,-1,1,
15,1,3
200 ENV 1,=9,5000
210 ENV 2,1,0,30,7,-1,10
220 SYMBOL
254,124,198,198,198,198,198,124
230 BORDER 0:INK 0,0
240 LOAD "Galaxia m/c":DIM a(5):CALL
@a(0):POKE 14415,0:CALL &7A58
250 DATA 205,6,185,221,126,0,205,165
260 DATA 187,17,180,112,237,83,178,112
270 DATA 62,8,245,14,1,126,229,33
280 DATA 3,0,17,0,0,6,8,245
290 DATA 161,32,47,241,203,33,41,41
300 DATA 16,245,221,42,178,112,221,115
310 DATA 0,221,114,1,221,115,2,221
320 DATA 114,3,221,115,4,221,114,5
330 DATA 42,178,112,17,6,0,25,34
340 DATA 178,112,225,35,241,61,32,194
350 DATA 24,8,123,180,95,122,181,87
360 DATA 24,201,62,3,17,180,112,245
370 DATA 62,2,245,33,228,112,6,8
380 DATA 26,119,35,19,19,16,249,62
390 DATA 255,33,228,112,213,205,168,187
400 DATA 62,255,205,90,187,209,1,241
410 DATA 255,235,9,235,241,61,32,218
420 DATA 1,14,0,235,9,235,62,10
430 DATA 205,90,187,62,8,205,90,187
440 DATA 205,90,187,241,61,32,192,62
450 DATA 9,205,90,187,205,90,187,62
460 DATA 11,205,90,187,205,90,187,195
470 DATA 90,187,228,112,17,240,0,33
480 DATA 128,171,195,171,187

```

Charts

Top Twenty

- 1 (1) Feud
- 2 (2) BMX Simulator
- 3 (3) Gauntlet
- 4 (8) Konami's Coin-op Hits
- 5 (5) Footballer of the Year
- 6 (6) 180
- 7 (11) Leaderboard
- 8 (9) Ollie and Lisa
- 9 (4) Paperboy
- 10 (-) Delta
- 11 (10) Curse of Sherwood
- 12 (13) Bomb Jack 2
- 13 (-) Nemesis
- 14 (7) Ninja
- 15 (-) Arkanoid
- 16 (14) Big 4
- 17 (20) Short Circuit
- 18 (16) Gun Law
- 19 (19) Escape from Singe's Castle
- 20 (-) Thrust II

All figures compiled by Gallup/Microscope

Bulldog	Code Masters
US Gold	Imagine
Gremlin Graphics	Mastertronic
Access/US Gold	Firebird
Firebird	Elite
Elite	Thalamus
Thalamus	Mastertronic
Elite	Konami
Konami	Mastertronic
Mastertronic	Imagine
Imagine	Durell
Durell	Ocean
Ocean	Mastertronic
Mastertronic	Software Projects
Software Projects	Firebird

Games from the adventurer of the year

Tony Bridge looks through new releases from Tom Frost's Tartan Company

Although adventure-writing utilities like GAC and *The Quill* seem to have cornered the market, there are still a handful of others, chief among which are CRL's *Genesis* and the Basic compiler from Tom Frost.

Tom has often written to me, and each letter contains help in a variety of adventures: he subscribes to many of the professional and amateur magazines, and offers help to other players in a bewildering number of programs. On top of all this, he won, as many of you may remember, the Adventurer of the Year Award for being the first to complete Incentive's *Ket Trilogy*. So he knows what he is talking about. His Adventure-Writing System allows the programmer to input data into a Basic framework, then compiles this into a program that has almost all the speed of a machine-coded program. The main advantage of this is that the author then has control over layout, sound and so on. At £4.95 (£2.50 for the graphics add-on), the package is a quarter the price of others on the market and serves as a good introduction to adventure-writing.

If you're at all concerned about the final results of such a program, Tom's own software, Tartan Company, has just released a bumper bundle of adventures written with the aid of the system, and they should convince anyone that here is something worth looking at.

Prince of Tyndal is a single adventure, and costs just £1.95. In the story, you are Olgarth, the ruler of the mountain state of Tyndal. The rod of wisdom handed down through generations of royal princes, and by which all wise decisions are made, has been stolen by Eldin the sorcerer. Your task, of course, is to recover the rod, with the aid of certain friends, including Arden, who, by a stroke of fantastic luck, is the sorcerer's apprentice. This is the scene-setting at the start of the story, and if there is one weakness in these stories, it is the rather bland and matter-of-fact way in which the adventure is begun.

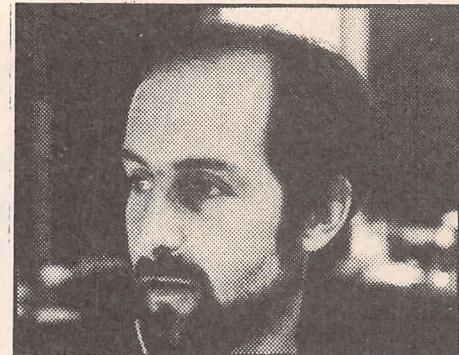
Although these adventures are initially written in Basic, they certainly exhibit plenty of features usually only seen in more sophisticated systems. For example, *Say Follow* and *Say Leave* are recognised commands in most of Tartan's games, and often come in handy, when,

for example, a crowd will succeed where the individual succumbs. The game position can be saved to tape or to memory, while the rather blocky graphics can be turned on or off by the strange means of typing 1 or 2. The adventure itself is of the usual 'wander about, pick up objects and use them to get out of trouble' type, this time with the added fillip of the occasional bit of magic as well as dragons and demons.

Although most of the problems are logical enough, there is the occasional rather tenuous connection. For example, you'll find a hook, and then you must attach a hook to a pole. The required command is *Fix Hook*, nothing else. Why, I don't know. There are other examples of such word matching, I'm afraid, and the programs suffer from the usual problem of constructions like 'You see a suit of armour - exam suit - you see nothing special - exam armour - there's a lance and a shield attached' and so on.

Again, you enter a kitchen, and though it's a bit much to ask to be able to examine every single item that you might expect to find in your average kitchen, or even those items detailed in the picture (and I know it's devastatingly expensive in memory terms to cater for any likely input), surely there should be something more than 'some seeds' in the kitchen when there are lots of cupboards, pots and pans, utensils and so on, and a bit more response than 'you see nothing unusual', which is a bit of a worn-out cover-all nowadays. However, the flags seemed to be used well, and things seem to happen as they should. Difficulty? About five on a scale of 10, but it has a nice atmosphere and pretty graphics.

Shipwreck and *Castle Eerie* are together on one tape for £2.95; the titles tell all. In the former, you've saved up for the holiday of a lifetime cruising on a luxury liner in the South Pacific. A small fire starts in the engine room and very soon rages out of control - forced to abandon ship, your only concern now is to find land and get rescued. In common with the other programs, a nice title page leads to the game proper, which has a nice chunky character set, and chunky pictures, too, in the top third of the screen. As some other Tartan programs



show, the advantage of writing in Basic is that you can really put them anywhere - but the *ABS* won't help you draw fabulously detailed illustrations. They're quickly drawn, however, and the text appears quickly too (the graphics are redrawn every time you visit the location, although there is a discreet little beep when the computer's finished drawing, so you can look away and pick your navel unhindered). Even though this is a Basic game, the compiling effect of the *ABS* means that there is a commendable speed in both input and response.

In the first major puzzle of the present story, you see, in your cabin, an untidy heap of your belongings and you must tidy the cabin to reveal something. I felt this was a little unfair as searching and examining the heap of clothes revealed nothing. Another required command at a later location, *Buy meal* was also a little unfair, as nobody *buys* a meal on board ship! But at least the computer is intelligent enough to prod the player in the right direction when certain commands are tried and not immediately understood.

Meanwhile in *Castle Eerie*, you're Charlie Jones, an extra-special agent working for a secret Government department dealing with unsolved mysteries. You are known as a proper Charlie! Your assignment is to investigate the weird goings on at the eerie castle in Scotland, apprehend the perpetrators (if indeed there is anything substantial to get hold of!) and deliver them to the police. All of the features of the other stories are present in this one, although the character set is a nice easily-read slanty italic. There are plenty of puzzles in this one and a lot of creepy exploring to do. As with all the other stories, there are a few sound effects which however won't give the Amiga much to worry about.

Still, my adverse comments should be seen in their proper light - here's a small adventure label that is run, as they say, by adventurers for adventurers. You'll find nothing particularly earth-shaking, but you will find good value stories ...

These tapes are available from Tartan Software, 61 Bailie Norrie Crescent, Montrose, Angus DD10 9DT.

Ask also for details of their 6-in-1 compilation tape, which I hope to be looking at soon.

YOUR INVITATION

VENUE:
DATE/TIME:
METHOD
OF ENTRY:
ID NUMBER:
PASSWORD:

Your micro
of your choosing
dial 01-618 1111
4444444444
4444

Micronet and Prestel *
invite you to an eye-opening display of database facilities
'Bring a 1200/75 Baud Modem'

MICRONET/PRESTEL – beating the competition!

MICRONET, DURRANT HOUSE, 8 HERBAL HILL, LONDON EC1R 5EJ TEL: 01-278 3143

* Prestel & the Prestel symbol are registered trademarks of British Telecommunications Plc.

What Now?

The Adventurers Handbook

The 80 page monthly magazine devoted
totally to Adventure and Strategy.

Issues 15 & 16 are available now.

Solutions, Maps, Hints, Articles, & Reviews.

Each and every month at only £1.50

Subscription Rates:

3 issues - £4.25, 6 - £8.25, 12 - £16.00

Issues 1-14 of the Adventurers Handbook covering over 250 adventures
are still available at £1 each or all 14 for only £10.
(overseas please add 25% P/P)

Arcade Players!

We also cater for the players who
play arcade games. Our monthly mags
are full with Pokes, Maps, and Hints.

The mags are available for the
following machines:

C64/128, C16/Plus 4, BBC,
Amstrad and Spectrum.

For only £1 each
Subscription Rates:

3 issues - £2.75, 6 - £5, 12 - £9.
(overseas please add 25% P/P)

Available from:

H & D Services (PCW)
1338, Ashton Old Rd
Higher Openshaw
Manchester
M11 1JG.

Please ensure that all
cheques/PO's are made
payable to:

H & D Services

THE O.S. CONTROLLER CARD

DESKTOP STYLE UTILITIES FOR THE ATARI 800XL AND 130XE COMPUTERS

One of the most powerful features of computers like the ATARI ST or the COMMODORE AMIGA is their ability to run commercial software and have a range of utilities in memory at the same time (better known as DESKTOP UTILITIES). With the O.S. Controller Card installed into your ATARI 800XL/130XE you too can have this powerful feature . . .

DESKTOP STYLE UTILITIES INCLUDED WITH THE HARDWARE

THE SHQ SNAPSHOT PRINTER DUMPER – name one other 8-bit or 16-bit computer for that matter that will allow you to dump whatever's on screen to your printer, think about it – all those great game screens, printouts of those masterpieces from your art packages or screens from application software – and all at the touch of a button with a printout that matches a photocopy!!!

THE PROGRAM DUMPER – when your Happy's unhappy, your Archiver won't archive or your Freezer won't freeze then there's only one answer 'THE DUMPER'. The only effective way to upgrade your cassettes to disc or make disc to disc backups . . .

THE O.S. BOOT MENU – using multiboot menus, fed up having to reboot the computer to re-enter the menu, load up your software then doing it all over again? If the answer is YES then the O.S. BOOT MENU is for you, just a press of the HELP key and you are presented with a memory resident menu . . . instantly.

I/O ANALYSER – a very powerful disc debugging tool. Other features include the ability to alter the master character set, switch on/off the auto scroll, noisy I/O, key click, inverse flash, high speed cursor, alter the primary colour defaults and lock them, save any pre-XL/XE operating system with or without customised ROMS . . .

OTHER DESKTOP STYLE UTILITIES AVAILABLE

- 1) 1029 SNAPSHOT PRINTER DUMPER with shade selector.
- 2) SHQ PRINT LINK GRAPHICS CONVERTER – gives your graphics packages like Typesetter (XLENT SOFTWARE) photocopy quality printouts. When tested against leading graphics packages for the ATARI ST, the ATARI 8-BIT won hands down!!
- 3) SHQ PRINT LINK TEXT CONVERTER/SHQ PRINT LINK NLQ ENHANCER . . . These utilities allow you to get the most from your printer's text modes, give your NLQ mode a more professional look, or if you have a printer with no NLQ then use the text converter, or you can simply use these to get more out of your ribbons . . .

MAIL ORDER PRICE LIST

O.S. CONTROLLER CARD AND SOFTWARE FOR THE 800XL	£69.95
O.S. CONTROLLER CARD AND SOFTWARE FOR THE 130XE	£79.95
OTHER UTILITY DISCS EACH	£12.95
PRICES INCLUDE POST AND PACKING + INS. IN THE U.K. ONLY.	

PLEASE MAKE CHEQUES/POSTAL ORDERS PAYABLE TO:

Computerhouse

14 Romilly Court, Landridge Road, Fulham, London SW6 4LL
Telephone: 01-731 1276

NOTE: THE O.S. CONTROLLER CARD IS AN INTERNAL HARDWARE BOARD AND WILL REQUIRE A SMALL AMOUNT OF INSTALLATION, WE CAN OFFER FREE INSTALLATION SERVICE BUT CHARGE £5.50 FOR RETURN POST/PACKING AND INSURANCE . . . (LIKE WRITING UTILITIES? THEN GIVE US A BUZZ . . .)

POPULAR Computing WEEKLY

SPECIAL supplement

1987

3-9 April

COMPUTER MUSIC

INSIDE

25

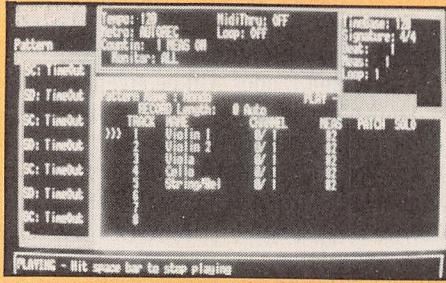
New computer music gear for micros including 64, ST, Spectrum and Amstrad

27

Datel's sampler/drum machine for the 64 updated with MIDI

29

Passport's Master Tracks; something for musical PC owners



30

Music manuscripting made easy with EMR's BBC Scorewriter

32

A powerful MIDI sequencer for the CBM 64 from Passport

While the Atari ST dominates the music scene, there's no shortage of new products for the eight-bit micros.

ST software, though, continually breaks new ground. Possibly the most bizarre example yet is X-Alyser, which takes Yamaha DX-7 sounds, analyses their back on samplers such as the Prophet 2000. DX sounds from a sampler? It could only be done by computer!

Meanwhile user groups continue to prosper, as user-friendly packages such as those from Electro Music Research capture more of the micro market.

The PC is also being pressed into service, as American products come in to take advantage of the Amstrad 1512's success. It seems that music is a fast-growing application. ◀



NEWS

ST BOOMS

The first sampled drum program for the Atari ST looks like hitting the streets soon. Microdeal's **ST Digidrum** is a software-only system, including fourteen default sound ranging from bass and snare to toms, electro sounds, tambourines and even dog barks.

The software allows you to define 99 patterns, each of four to 32 beats. Song chains can consist of up to 70 entries, including repeating patterns. Patterns and songs can be saved to disc.

ST Digidrum can be used with the ST **Replay** sampling cartridge for better sound quality. This also allows you to use your own samples as drum sounds, although alternative discs of samples are also available.

Price for the standard package is £24.95, while sample discs are £14.95. Contact Microdeal on 0726 68020. ◀

C-LAB LATEST

Sound Technology is about to unleash another onslaught of MIDI music software on an unsuspecting world. The **C-lab SuperTrack** program for the Commodore 64 has been by far the best MIDI composer for that machine over the past eighteen months or so, and now it's to be joined by **ScoreTrack**, a music notation package which will sell for £210.

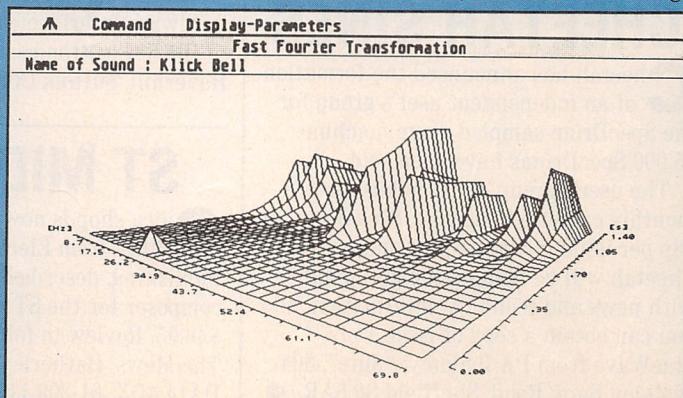
ScoreTrack is capable of uploading Supertrack files and reproducing them in standard notation with flats, sharps, ties and all the other symbols. Music can be printed out on any conventional printer and note correction (quantisation) and transposition are available.

C-lab is also manufacturing the original SuperTrack composer on a ROM cartridge with built-in MIDI IN and three MIDI OUTs. The cartridge, of course, loads the program instantly at the start of a session without recourse to disc, but if you want one you'll have to contact

Sound Technology directly as no importer has been appointed.

Available in the next few weeks are **Creator** and **X-Alyser** for the Atari ST range. Creator is the Atari conversion of Supertrack but contains an advanced Arrange mode rather than a straightforward Song mode, which allows you to process tracks in a flexible manner, for instance when arranging film music. MIDI System Exclusive information is also handled so you can record sounds, samples and drum patterns.

Maximum resolution is 1/786 note (!) and the package offers 64 polyphonic tracks each with 16 MIDI channels, 100,000 note events (on a 1040 ST), software-based MIDI Thru, variable delays on each track, MIDI event filtering



and editing of every MIDI event, timing step and MIDI channel value. Cost will be £285.

X-Alyser stores sounds for the Yamaha DX7 and arranges them into a complete data bank of up to 3000 sounds (1000 are supplied with the package). The package can carry out and display in three dimensions a Fast Fourier Analysis of any sounds, and can dump sounds to a sampler such as the Prophet 2000 in this form

ATARI SHOW

The Atari Computer Show takes place at London's Novotel Exhibition Complex (near Hammersmith tube) on 24th-26th April. A special music studio is being created for the show by Syndromic Music, concentrating on 520ST and 1040ST MIDI packages.

Included will be packages for visual editing of the Casio CZ and Yamaha DX synths, semi-professional sequencers and fully professional packages with SMPTE time code synchronisation, the 16-bit ADAF sample manipulation package from



AUTUMN is a standard format to allow data for music compositions to be exchanged between software and hardware packages on the Acorn micros.

The Acorn User Tune and Music Notation system, to give its full name, allows a Hybrid Music 5000 File to be replayed on the Music System, for instance. Conversion routines for other systems are being written now.

Details from Tony Quinn, Redwood Publishing, 141-143 Drury Lane, London WC2B 5TF, 01-836 2441. ◀

CHEETAH SINES

Cheetah has announced the formation of an independent user's group for the SpecDrum sampled drum machine. 25,000 SpecDrums have been sold.

The user's group, Sine, publishes a monthly cassette magazine, SineWave, at 98p per issue including post and packing. Cheetah will be helping the group out with news and technical information, and you can obtain a copy of issue 1 of SineWave from PA Bellamy, "Sine", 304 Walkley Bank Road, Sheffield S6 5AR. ◀

(without entering the audio domain).

Simple ADSR envelopes are simulated, and sounds can be output over the Atari speaker in the absence of a DX7; the package can also sort analysed sounds by sound type, and so however they're named you can sort them into a logical, musically useful order. Price is £199.

Sound Technology, 6 Letchworth Business Park, Avenue One, Letchworth, Herts SG6 2BB. Tel: 0462 480000. ◀

Hybrid Arts, and software from Dr. T, C-Lab, Hybrid Arts, Steinberg research, Soundbits, Passport and many others.

Lectures and Demos will be given by well-known musicians and specialists such as Popular's own Mark Jenkins, and synthesisers and ancillary equipment will be represented by Akai, Casio, Ensoniq, Yamaha, Elka, Roland, TOA, Korg and Alesis.

Times of the show are 10am-6pm Friday 24th and Saturday 25th, 10am-4pm Sunday 26th. More information from Vince Hill Associates, 24/26 Avenue Mews, London N10 3NP, 01-883 1335. ◀

AMSTRAD ACTION

DHCP Electronics has launched several MIDI hardware and software packages for the Amstrad PCW and CPC ranges. We'll be reviewing some of these products over the coming weeks, but in the meantime you can obtain an information sheet with performance data from DHCP.

The packages are a Casio CZ101/CZ1000 Editor; a Casio CZ230 Editor; a Korg DW6000 Editor (£29.95); a CZ sound library and an eight-track realtime sequencer for the CPC 464/664/6128; a hardware CPC MIDI interface (£50); and a User Port programmable for input or output (3x8-bit ports for £25).

For the PCW 8256/8512 there is a MIDI interface (£79.95) with Sync In/Out, a Casio CZ voice editor (£14.95), and conversions of the other software on the way.

There's also a MIDI 1 In-8 Out hardware interface coming.

DHCP Electronics, 32 Boyton Close, Haverhill, Suffolk CB9 0DZ, 0440 61207. ◀

ST MIDI PROG

Silica shop is now importing MIDI Play from Electronic Music Publishing, described as a basic music composer for the ST range and costing £49.95. Review to follow. Silica Shop, 1-4 The Mews, Hatherley Road, Sideup, Kent DA14 4DX, 01-309 1111. ◀



Stocks and shares don't seem to have much place in a music supplement, but American Darryl Gammill claims to have made the link. Using a method he calls **Audio-Optics** (TM, no doubt), Gammill has translated the stock market performance of the top ten American corporations into musical terms.

Using sundry business graphics programs, statistical analysis routines, MIDI interfaces and synthesisers, Gammill has produced a music tape which represents the "sounds" of the chosen companies as they negotiate the perils of the stock market. Using quantisation techniques to keep everything in tune, the Audio-Optics performances sound like everything from Stockhausen to jazz-funk.

Titles of the finished pieces include "Rhapsody in Big Blue" (IBM-geddit?) and "Decisions, Decisions".

We thought that this was a spoof until we heard the music - what we still can't believe is Gammill's claim that listening to the music helps you to predict stock market trends. Contact Gammill & Co, One Tabor Center, 1200 17th Street, Suite 2424, Denver, Colorado 80202. Tel: 0101 (303) 629-6200. ◀

MUSIC NET

MusicNet is a US-based modem-linked music information service, which offers advice, hints, and new sounds and samples downloaded through the system. New sounds for the Yamaha DX7, Juno 106, Oberheim OB8, Roland MKS-80, Yamaha PX15, Ensoniq Mirage, Prophet 2000 and others are available, and subscription costs are \$75 per year and \$5 per hour.

Dialling DATA-914-724-4006 entitles you to 15 minutes free of charge to browse through MusicNet, and you can subscribe on-line. A Ven-Tel 1200 Plus modem is available from the service at \$299, which includes a free subscription.

MUSICNET, PO Box 274, Beekman, New York 12570, USA. ◀

While Supersoft's Microvox sound sampler remains the most powerful unit on the market for the Commodore 64, Datel's budget unit has just been updated, and now offers improved performance at a more affordable price.

When first released, the Datel sampler/drum machine - two different versions of substantially the same hardware - suffered from being supplied with ambitious but flawed software. Many of the faults of the original have now been eliminated, and new features such as MIDI added.

The Datel hardware can be used with several dedicated software packages. One allows it to be used as a true sampler, recording real sounds through a microphone, then editing and replaying them; another allows the sampler hardware to be used as a digital drum machine, with eight high-quality voices which can be arranged into complex patterns and songs.

The hardware, an undistinguished brown box, plugs into the 64's user port. There's an operation LED on one side, while on the rear are an output volume knob and several sockets. On the sampler, one socket is for the sound input from a microphone; one for line level inputs; while the last is the output to an amplifier, or to the computer's audio/video port to route the sound through a TV.

The sampling software, available on cassette or disc, is menu driven. The first submenu allows you to setup the sampling routine, splitting the sampler storage area into one, two, four or eight areas. Frequency can be set from 1 to 8; this varies the length (but also of course the quality) of the sample from 1 to 2-7 seconds.

The trigger threshold of the automatic recording level is set next, using a visual bar indicator. Lastly, MIDI input to the sequencer can be toggled on or off.

Exiting to the record sample menu, you can perform sampling using the automatic input level function, or by pressing the space bar. The sample can then be reversed, overdubbed with another sample, or can have an "echo" repeat effect added to it, at a rate determined on the previous menu.

The sequencer and editor page allows you to set start and end pointers on a graphic representation of the sample. In this way you can chop unwanted noise off the start or end of a sample.

It's also possible to copy blocks of the sample, to create rapid repeat effects; set a loop for continuous play; or record simple 80-note sequences using the top two rows of QWERTY keys.

Most excitingly, if you plug a MIDI interface such as the £24.99 Datel unit into the cartridge port, you can play the sampler from your MIDI synth keyboard. The sampler responds only to MIDI channel 1, and only in a two octave range, and will ignore MIDI key velocity information. But for all its limitations, the

The ComDrum package is an eight-voice, three-note polyphonic, real or step time digital drum machine program. The quality of the sounds produced is well up to that of similar products such as the Tron **Digidrum** and Supersoft **Rhythm King**, but only with the Datel unit can you use your own samples (prepared with the sampler software) as part of your percussion pattern.

The eight drum sounds can be played live by tapping the number keys, or they can be arranged into patterns using the compose and edit page. This is laid out in a grid form, with a 32-beat bar on which dots are placed to indicate where the drum voices sound, up to three on any beat.

Patterns can be tapped in in real time against the beat of a metronome (which I found impossible to switch off, despite the manual's instructions to hit M). Alternatively, using the cursor and number keys allows you to place beats exactly in place on the bar. Real time patterns can be edited in step time or vice versa.

Time signature and tempo can be varied; the maximum tempo is now pretty fast, an improvement on the original software, in which even the top speed was funereal.

Having recorded a number of patterns, you can arrange them into up to eight songs. Each song can include 16 steps consisting of any of the eight patterns, repeated up to 99 times. Songs can be titled, and saved to tape or disk together with the relevant patterns.

It's also possible to copy patterns from one song to another via the scratchpad facility.

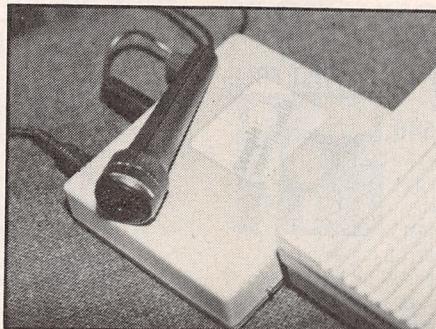
The ComDrum editor program helps you to convert Datel sound samples into ComDrum format, and arrange them into kits for use with the drum software. This is the only system other than the much more expensive Microvox which allows you to do this.

The only real omission from the ComDrum system is MIDI compatibility; you can't play the drum sounds from a keyboard, nor can you clock the rhythms from a MIDI sequencer. Still, you can't have everything.

At the price, the entire Datel system - Sampler, ComDrum software and Editor - represents remarkable value for money. The added sample split, realtime screen plots, MIDI compatibility, user drum sound facility and other improvements make the system an attractive purchase for computer musicians on a budget. ▲

THE ART OF NOISE

DATEL'S COMMODORE 64 SAMPLER/DRUM MACHINE HAS BEEN UPDATED WITH EXCITING NEW SOFTWARE OFFERING MULTI-SAMPLING AND MIDI. CHRIS JENKINS DISCOVERS THE ART OF SAMPLED NOISE . . .



Datel sampler now represents the cheapest way for CBM 64 owners to get into MIDI-controlled sound sampling.

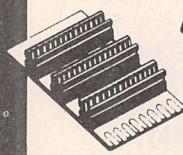
The sampler software also allows you to use the unit as a live effects unit, offering reverberation, echo and chopping of the input sound. Effect length is set from a menu, while repeat amount is set using the volume knob on the unit.

There are also three waveform displays; 2D, 3D and oscilloscope, which are of little practical use, but which look very pretty!

Datel sampler files can be saved to cassette or disc, and later used as sound sources for the ComDrum drum machine software. ComDrum software can be used with the sampler, or with the cheaper ComDrum hardware unit, whereas the ComDrum cannot use the sampler software.

Datel Electronics, Unit 8/9, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent, 0782 264510.

Save wear on your expansion port: 3 slot Motherboard for 64/128



ONLY £16.99
POST FREE

- ACCEPTS 3 CARTRIDGES
- SWITCH IN/OUT ANY SLOT
- ON BOARD SAFETY FUSE
- HIGH GRADE
- PCB/CONNECTORS
- RESET SWITCH

AVAILABLE NOW!!

Now a full Midi Interface for your 64/128 at a realistic price! POST FREE

NOW ONLY
£24.99



- MIDI IN
- MIDI THRU
- 2x MIDI OUT
- Compatible with most leading software packages: Advanced Music System • JMS • SEL, etc.

Special Offer! Buy Midi Interface + advanced music system only £49.99 + £2 postage (disk only).

NEW



only £14.99
POST FREE



If you have a disk drive then you need a Diskmate!!

Diskmate is a fast disk turbo loader that will speed up your normal loading software by 5 times.

BUT THAT'S NOT ALL

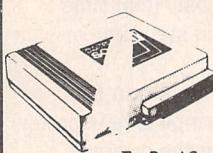
- Fast format (approx. 10 seconds).
- Improved single stroke DOS commands ie. load, save, directory, scratch, etc.

DIGITAL SOUND SAMPLING

COMPLETE PACKAGE

£49.99
POST FREE

FREE AUDIO (TV LEAD)!



NOW FOR YOUR
COMMODORE 64

The Datel Sampler now brings you this technology at a sensible price!

- The Sampler allows you to record any sound digitally into memory and replay it instantly at any pitch backwards, forwards, ascending scale, descending with echo, reverb, flanging, endlessly looped etc. Truly professional hardware incorporating
- Full 8 bit D and ADC conversion
- Line or MIC input, line output and feedback control
- A comprehensive software package including
- Live effects menu with echo, reverb, digital delay, etc
- Full sample editing facilities with review and on screen frequency plotting
- A powerful real time sequencer

Copy Drum Software available separately at £9.99 to turn your sound sample into a Com-Drum system as well as a sampling system.

IT'S BACK

TOOLKIT IV

THE ULTIMATE DISK TOOLKIT FOR 1541/1540

Toolkit IV has, for some time, been generally recognised as the best disk toolkit available. The only problem for Datel was that it was distributed by someone else!! So when the opportunity to obtain the rights came our way, we jumped at it. And what's more, in keeping with our general pricing policy, we are offering it at less than half the previous selling price. A disk toolkit is an absolute must for the serious disk user and TOOLKIT IV has more features than most for less:



ONLY £9.99
POST FREE

DISK DOCTOR V2 - Read and write any track and sector including extra and renumbered tracks. Repair damaged sectors. Look underneath read errors.

HEADER/GAP EDITOR - Decodes and displays ALL header information including off bytes and header gap. Rewrite the entire header and header gap. Renumber sectors. Also edit any sector tail gap.

DISK LOOK - Sort directory. Recover lost files. Display file start/end addresses. Disassemble any file program directly from the disk to SCREEN or PRINTER including undocumented opcodes. Edit Bm. Much, much more.

FILE COMPACTOR - Can compact machine code programs by upto 50%. Saves disk space. Compacted programs run as normal.

PLUS DISK DRIVE SPEED TEST, DISK ERASE, DISK DRIVE RAM MONITOR, DISK LOG, BASIC COMPACTOR/UNCOMPACTOR, FILE MAKER + MUCH, MUCH MORE.

TOOLKIT IV is an absolute must for the serious disk user. It has all the routines that the others have plus all the ones they don't... there is no better product available at any price... available now complete with comprehensive instructions.

FAST DISK COPY - Copy an entire disk in 2 minutes or less using single 1541.

FAST FILE COPY - Selective file copy. Works at upto 6 times normal speed.

FORMATTER - 10 second format an entire disk or format any individual track or half track 0 to 41. Redefine any of 30 parameters to create or recreate unique disk formats.

ERROR EDIT - Quickly find and recreate all read errors including extra and renumbered tracks or sectors and half tracks from 0 to 41; even recreates data under errors and allows you to redefine any necessary parameters.

24 HR CREDIT
SEE US ON
CARD LINE
PRESTEL
PAGE No.
2588800004
12 Page
Catalogue +
Order Page

USUALLY SAME DAY
DESPATCH ON ALL ORDERS

SEND CHEQUES / P.O'S TO:

UNITS 8/9

FENTON INDUSTRIAL ESTATE,

DEWSBURY ROAD, fenton,

STOKE-ON-TRENT TEL: 0782 273815

FAX: (0782) 264510

COMPUTER DATA RECORDER

ONLY
£24.99
POST FREE



- QUALITY COMMODORE COMPATIBLE DATA RECORDER.
- PAUSE CONTROL COUNTER.
- SUITABLE FOR 128/64.
- ALSO AVAILABLE FOR: C16/PLUS 4 PLEASE ADD £1.00.
- SEND NOW FOR QUICK DELIVERY.

MODEL + ROBOTIC CONTROL MADE EASY WITH

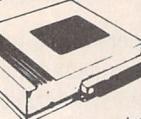
ROBOTEK

64
£39.99 POST FREE

Roboteck 64 is a comprehensive hardware/software package to interface your 64 to the outside world, models, robots, lighting, sensors etc. etc. The features make Roboteck 64 the most sophisticated unit available at any price.

- 4 output channels each with on board relay. • 4 digital inputs fully buffered. • Analogue input with 8 bit conversion.
- Sound input for voice recognition and voice controlled switching.
- Software features: sequencers to control output. Analogue measuring module. Test Program. Voice Activation Module, much more. Voice recognition software to be released soon.

Total package no more to buy!



NEW **Turbo Rom II**
Replacement Kernel
New upgraded routines! PLUS

Fast Format
Fast Save
Turbo Rom II
POST FREE £14.99

Turbo Rom actually fits inside your computer and replaces the normal slow Kernel Rom with superfast disc loading routines, plus extended DOS commands

- Loads most programs at 5.6 times speed
- Improved single key commands
- Fits inside computer so all ports are free
- Return to normal kernel at flick of switch
- Fitted in minutes no soldering usually needed (a few C64's the old Rom may have to be desoldered)

Turbo Rom I can be upgraded for £5 plus old chip.

NEW **smart cart**
An 8K or 32K pseudo ROM cartridge
£14.99 32K version
8K version

Now you can have a cartridge that you program as if it were computer RAM then acts as if it were ROM.

- Battery backed to last for upto 5 years (lithium battery). Simply load in the program and flick the switch. The cartridge can be removed and will retain the program just like ROM.
- Make autostart cartridges without the need for an EPROM burner
- Can be switched on/off board from keyboard.
- 32K version offers 4 x 8K pages under software switching.
- Some knowledge of m/c is required but full instructions included

TURN YOUR MPS 801 INTO 4 PRINTERS IN ONE!
PRINTER IV ONLY POST FREE £19.99

Alternative character Rom fitted in minutes - no soldering required.

Each set has true descendants.

- All 4 sets can be mixed within one document.
- Printer IV is a direct replacement for the normal printer ROM so it is 100% compatible with your existing software
- Graphics - No Problem either.

SEND NOW FOR QUICK DELIVERY

For anyone who uses their printer often this chip is a must.

It's quick and easy to use and the end results are impressive. YOUR COMMODORE Jan. '87. #8

IT'S A COMPLETE LIGHTPEN SYSTEM... IT'S AN ALL IN ONE ILLUSTRATOR/GRAFICS PACKAGE.

IT'S **BLAZING PADDLES**
ILLUSTRATOR

DEALER ENQUIRIES
WELCOME

Complete
with
the

ONLY
£24.99 POST FREE

TAPE OR DISK
An Advanced Lightpen featuring state of the art fibre optic technology.

ONLY £24.99 POST FREE (PLEASE STATE WHICH)

Yes Blazing Paddles is one of America's top selling graphics packages. Fully Icon/Menu driven, comes complete with the Datel Lazerwriter - A lightpen featuring the latest polymer fibre optic cable and sensor for pin point accuracy of a calibre simply not possible with conventional systems.... But that's not all - Blazing Paddles will also work with any standard input device including Joysticks, Touch Tablets, Paddles, Mice, Trackball and Professional Graphic Tablets

A SUPERB PACKAGE WITH ADVANCED FEATURES

- Advanced Colour Mixing to create over 200 textured hues
- Painting with a range of brushes • Air Brush • Ovals
- Rectangles • Lines • Rubberbanding • Text Mode
- Fill • Single Dot Mode • Freehand Draw
- Shape Library • Clear • Printer Dump
- Hires Screens saved from Action Replay can be loaded and edited etc (Disk)

PLUS A zoom feature for single Pixel editing while viewing, the results at full scale. • Powerful cut and paste facility, shapes can be picked up, moved around, repeated and saved. • Full Load and Save feature for pictures, shapes and windows which are supplied.

If you think the Software you got with your Mouse/Graphitab is a bit weak then you can buy Blazing Paddles Software alone.

FOR ONLY £12.99 TAPE OR DISK (PLEASE STATE)

More conventional Lightpens cannot cope with the high pixel resolution of Blazing Paddles - only Lazerwriter is suitable as a Lightpen input!



**PADDLES
ILLUSTRATOR
IS FOR
EVERYONE!**

Using the Lazerwriter a child can use it as a colouring book or a computer artist can create superb graphics.

RHAPSODY

IN BIG BLUE

MARK JENKINS LOOKS AT PASSPORT'S
EXPENSIVE BUT POWERFUL PC MUSIC PACKAGE

The IBM PC has always been popular in the US as a music computer, but then, they have more money than we do. It's only with the introduction of the Amstrad PC that more than a handful of UK musicians will become interested in multitrack composition programs which run on the PC and compatibles.

Several such programs are now available from Roland, Octave Plateau, and the company we're looking at here, Passport (distributed in the UK by Rittor Music). Prices generally haven't come down in response to the introduction of the inexpensive Amstrad range, but this may yet occur.

Anyone not yet familiar with the way micros can be used in professional and semi-professional music composition needs a little enlightenment about the MIDI interface. MIDI (Musical Instrument Digital Interface) is now standard on virtually all high-tech music products, and that includes not just synthesizers but digital pianos, home keyboards, effects units, mixers, even some guitars and wind instruments.

One of the most popular applications of MIDI is to use it to control (via a micro) large numbers of instruments simultaneously. Then, just as if you were using an expensive multi-track tape machine (£9,000 for a second-hand Lyrec 24-track to you, mate), you can perform music a piece at a time and play it all back simultaneously. Of course, you need as many instruments as there are parts to play in the piece in order to do this, but MIDI-equipped instruments are becoming ridiculously cheap and some (such as the Yamaha FB-01 module at £245) can play back up to eight parts simultaneously.

Most micros can be fitted with a MIDI interface (the Atari ST has one built in) and the software requires only that binary codes are output to sound certain notes on the correct one of 16 MIDI "channels" with different amounts of velocity, pitch bend and other performance parameters for each synth. What is more difficult is writing a user interface which the average musician

finds friendly and approachable.

Having said that, the display on **Master Tracks PC** is not the best seen in recent months. At £299 for the software and output card and £245 for the MPU-IPC MIDI interface, the package with its rather formal appearance suffers by comparison with snappier Atari 520 programs from Dr. T, Hybrid Arts, Steinberg Research and C-Lab. However, it's more powerful in some ways than any of them, being designed for any IBM compatible with 256k (ideally 320k) of memory and offering not 16 but 60 tracks of 16-note polyphonic information including velocity, after-touch, patch changes and so on.

Master Tracks uses Dynamic Phrase Allocation so that all the tracks do not have to be the same length and can loop independently. Notes are entered either in real time from a synth keyboard or one at a time from the computer keyboard.

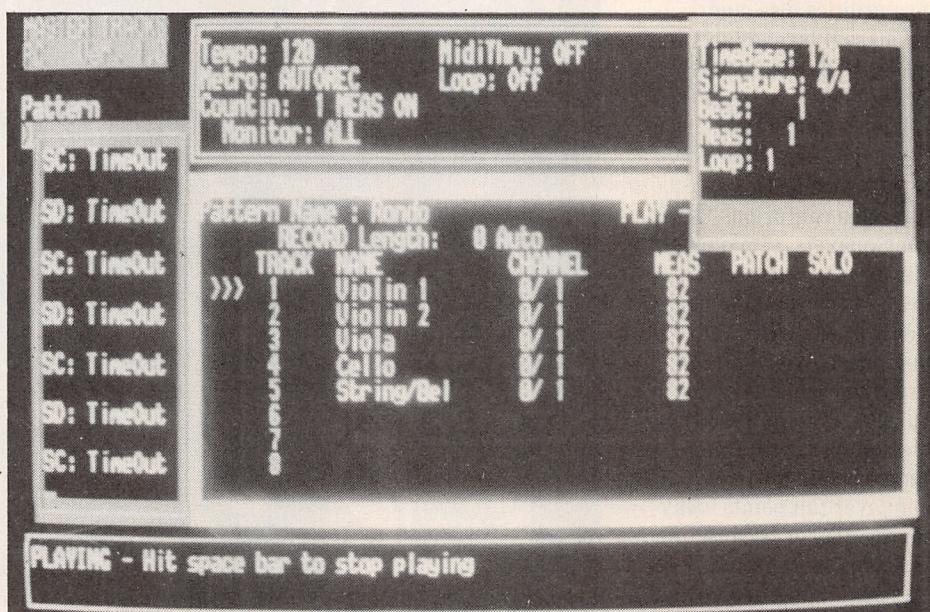
again when the correction has been made. Having recorded several short multi-track patterns, these can then be arranged into very lengthy songs.

If you're using velocity-sensitive synthesizers you can edit velocity information to change the volume or brightness of notes played back. In fact every single piece of MIDI data recorded including sound changes, pitch bend and vibrato is accessible for editing if you feel your performance has not been all it could have been.

The titles of the five main operating screens (Pattern, Edit, Step, Edit, Song and Song List) are all fairly self-explanatory except Song List which allows you to record a whole set of songs for a complete performance. Each screen has a main window in the centre with options down the side selected by their initial letters or with the cursor keys, plus a data display at the top and a message window at the bottom. Almost all functions have a Help option which brings up a few lines of useful information in the centre of the screen.

In operation the program often seems slow compared to recent Atari ST packages, taking enough thinking "Time Out" to irritate many musicians. Control from the micro keyboard is much less satisfactory than mouse control, although everything is clearly and logically laid out and well labelled.

If you already have a PC, the addition of Master Tracks and less than £1,000 worth of MIDI instruments could give you a formidable composition system.



As on other MIDI composer packages, you can record an initial track accompanied by a metronome click and then play it back while you add a second track. Tracks can be transposed, merged, edited or overdubbed by "punching in" over a short section and "punching out"

However, if you're buying a micro specifically to start from scratch in micro music, you'd save time and money by opting for the Atari ST instead. ◀
Rittor Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.

SCORING ON PAPER

For experienced musicians, nothing is more frustrating than the process of transferring your artistic ideas onto paper. Despite all the advances in music technology, standard music notation remains much as it has been for hundreds of years, and the tedious job of inking in scores on manuscript paper takes up valuable time and energy.

Computer systems to ease this chore, such as Passport's **Polywriter** and **Music Shop**, have recently appeared on micros such as the Apple and CBM 64. The latest such system, though, is for the BBC, and comes from a company with a long pedigree in computer music, Electro Music Research.

EMR's experience is based around the BBC and other eight-bit machines, squeezing the best performance out of Amstrad, MSX, Spectrum and other fairly low-tech micros. The **Score Writer** package complements EMR's range of sequencers, notators, sound editing toolkits and hardware units.

Although it's already possible to use the **Notator** package to produce printed music from Miditrack composer files, the **Score Writer** is far more ambitious. **Score Writer** comes in the form of a single ROM chip, plus a utilities disc, and versions will be available for the BBC B, B+ and Master.

Score Writer assumes that you have a good knowledge of musical notation. Otherwise, passages such as this might cause some confusion: "When mixing quavers, semiquavers or demisemiquavers it is necessary for you to indicate which way the extra tails should point. With dotted rhythm the semiquaver tail naturally points toward the dotted quaver: with the example below the semiquaver tail points away from the quaver because the two semiquavers form a sort of rhythmic subgroup of their own!"

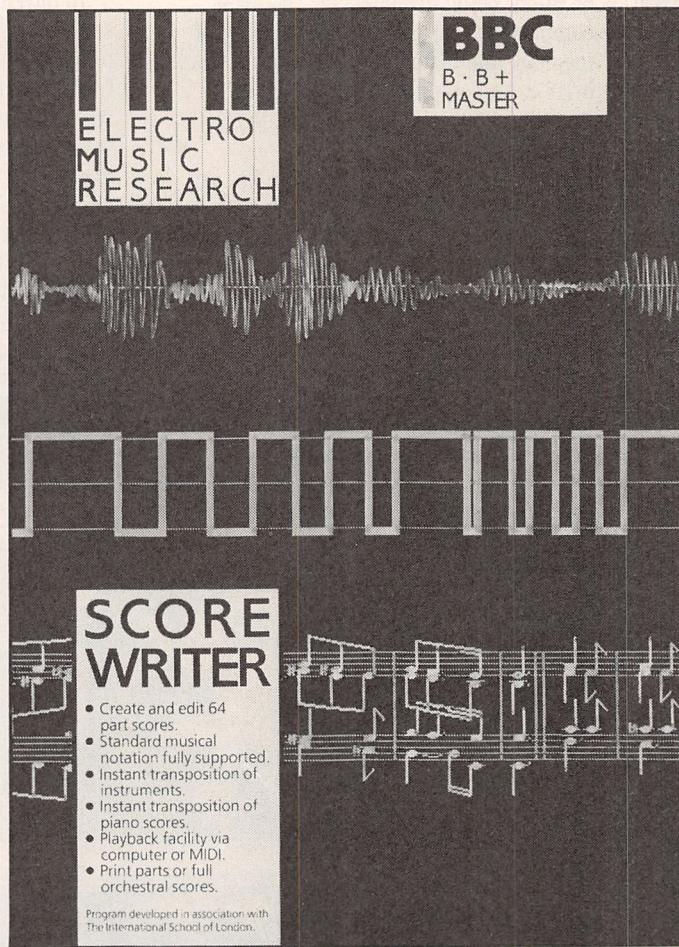
Score Writer will play multi-part tunes using the BBC's internal sound chip, but, if you try to play a tune with more than three voices using the sound chip, it will "strum" the chords in an attempt to play every note. This is a useful facility, but limited in its ability to reproduce

DAVID KEITH ON EMR'S SOLUTION TO GETTING YOUR MUSICAL MASTERPIECES DOWN ON PAPER USING A BBC MICRO

Beethoven, so a more practical way to reproduce the music is to use an EMR MIDI interface and sundry MIDI synthesisers.

The simplest level of operation, SCREEN, allows you to enter music on a stave, using A-G to select note, and other keys to indicate octave, note durations, sharps and flats, naturals, rests, triplets and so on. To help you remember all the functions, the package comes supplied with a function key template.

Having entered a simple line of music, you can scroll through the stave using the



cursor keys, and entering any desired corrections. Returning to Command mode allows you to play the music using any of the four preset chip sounds, or via MIDI using any channel from 1 to 16. It's also possible to redefine the chip sounds, and tempo can be set either in beats per

minute, or in crochets.

Music can then be printed out using an Epson FX60, or many other kinds of printer once you have used the printer instal routines.

Having created one track, another can be opened up using NEW from the command page, up to a total of 16 tracks. Each track can be named if you wish.

If you have a complicated score with many chords to enter, you can do it in separate monophonic tracks then combine them using the CONSOLIDATE routine. Conversely, using the TRACK SPLIT facility, you can divide a complete score into separate tracks; but combining them again may not give you the same score as the original.

The disc filing system takes account of the fact that longer scores may run out of memory space. Scores can be filed in segments, or you can save just a section between defined bar numbers. It's also possible to combine entire scores using the MERGE facility, or to lift tracks from one score and incorporate them into another. Obviously, using a twin or double-sided disc makes life easier.

The printing routines, which are based around a simple screen dump, allow you to vary the spacing of staves and window size so as to produce a neat result.

One problem with **Scorewriter** is that it does not generate or receive a MIDI clock pulse for synchronisation with drum machines and other MIDI sequencers. It's therefore quite unsuitable for use as a sequencer, although of course that is not its real purpose.

A more major problem is that entering all the notes from a QWERTY keyboard can be almost as tedious and time-consuming as writing them on manuscript by hand. Surely it would be better to use a system by which note data is entered via a MIDI

keyboard?

However, for skilled musicians with a need to create, store and edit complex scores, this package should solve all their problems. ▲

EMR, 14 Mount Close, Wickford, Essex SS11 8HG, 0702 335747.

THE MIDI EVENT!

Hybrid Arts offer a range of Atari ST MIDI software to suit all entry level, professional and studio MIDI/SMPTE applications.

Hybrid Arts, Inc and Syndromic Music are pleased to announce the release of the following products with many more to come, offering as a standard policy Tried - Tested - Bug Free software, full upgrade facility, technical hot-line, plus a regular USER FAXSHEET.

Professional, Upgradeable, Compatible and Affordable. Integrated software and hardware systems from Hybrid Arts, Inc.

MIDI UTILITIES ST - £49.95

MIDI UTILITIES ST is a multi-purpose program containing two full editors - MACRO & CONFIGURATION - and allows users to program GENPATCH ST files. Real Time MIDI Processing. View MIDI data streaming over the MIDI Bus. MACRO editor for single commands and test commands. MACRO & CONFIGURATION files can be saved to disk. Program up to 36 keys for sending MIDI data with single keystroke.

CZ-ANDROID ST - £89.95

The perfect sound editing tool, patch librarian and sound creator for all Casio CZ Synthesizers.

CZ-ANDROID contains four separate but interactive modules:
Numeric Editor
Graphic Editor
Patch Librarian
The Android Function
Files fully compatible with GENPATCH ST.
Hear the sound as you edit!

DX-ANDROID - £219.95

DX-Android is a fully interactive Editing/ Librarian and Artificially Intelligent Programmer for Yamaha DX7/TX series of synthesizers.

DX-ANDROID ST comprises of the following modules:
Numeric Editor
Graphic Editor
Patch Librarian
Automated Patch Loader
The Android Function
Files fully compatible with GENPATCH ST
Hear the sound as you edit!

GENPATCH ST - £139.95

GenPatch ST is a Generic Patch Librarian for all MIDI equipment that offers System Exclusive data. GenPatch Accessory is an integrated part of the MIDITRACK ST series. Transfer and Load files to/from MIDI/Disk/Hard Disk/Computer. Store single patches, bulk dumps, samples, sequences etc... Make hard copies of any files including MIDI data. MIDI data transfers seen in real time. Pre-tested and preset for over 50 MIDI devices! Files fully compatible with DX/CZ-ANDROID/ MIDITRACK ST Series/MIDI UTILITIES.

EZ-TRACK ST - £59.95

Entry level 20 Track Real & Step Time MIDI Recorder. Mix/Copy/Quantize/Solo/ Mute Tracks. Instant Transposition with MIDI Exempt Channel. MIDI THRU Feature/Real Time Metronome. Accesses all MIDI Channels plus Start/Stop Clock via MIDI. Over 27,000 notes on 520ST/FM & 63,000 notes on 1040ST. Files fully compatible with EZ-SCORE/MIDITRACK ST Series.

SMPTETRACK PRO ST - £539.95 -

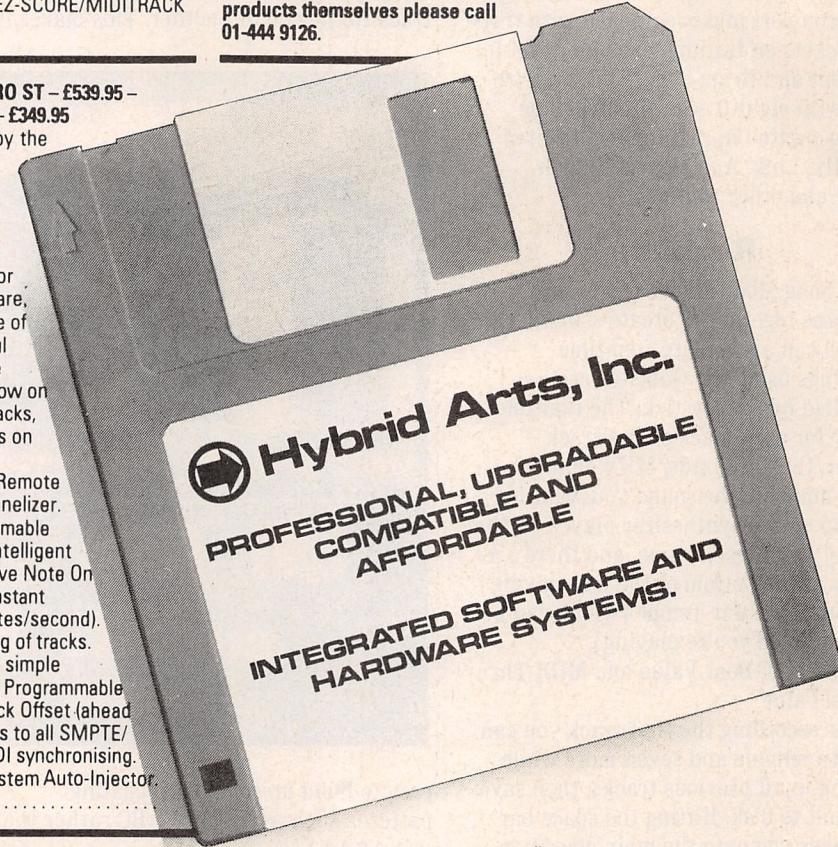
SYNCTRACK ST - £349.95

Don't be put off by the price, these packages INCLUDE the software and SMPTE Read/ Write Generator or Tape Sync Hardware. This has to be one of the most powerful and cost effective MIDI recorders now on the market. 60 Tracks, up to 63,000 notes on 1040ST/17,000 on 5205ST/FM. MIDI Remote Controller & Channelizer. Over 100 programmable quantize levels. Intelligent Punch In/Out, move Note On or whole event. Instant Locate (15,000 notes/second). Mixing & Unmixing of tracks. Sophisticated yet simple Looping/Chaining. Programmable Tempo Track Track Offset (ahead and behind). Locks to all SMPTE/ MIDI and non-MIDI synchronising. GENPATCH ST System Auto-Injector. And there's more.....

SMPTEMATE ST - £479.95

A general purpose interface unit that transforms your Atari ST into a SMPTE Read/Write Generator. SMPTEMATE reads/writes all standard SMPTE and some non-standard types of SMPTE including NTSC, PAL, DROP, NON-DROP, two types of JAM SYNC. Bit Accurate. Reshapes SMPTE. Reads & Writes Oberheim/Roland FSK plus Roland Sync. Reads & Writes 96, 48 and 24, ppq. Reads & Writes Click. Plugs into RS-232 port for efficient data transfer. Hardware gets its power from Joystick port II. Doubles as a mouse pad. Programmable Auxiliary Out/IN, SMPTE IN/OUT. Totally compatible with SYNC/ SMPTETRACK/ADAP1.

Hybrid Arts ST software is available from a selected and knowledgeable dealer network throughout the UK. Should you have any problems obtaining information, demonstrations and the products themselves please call 01-444 9126.



Please send me details on the Hybrid Arts range of ST Software/Hardware.

I own an Atari ST Computer - YES/NO. _____
I am particularly interested in _____

NAME _____

ADDRESS _____

POSTCODE _____

SYNDROMIC
MUSIC

'Creative music for creative people'

SYNDROMIC MUSIC, 24/26 Avenue Mews, London N10 3NP. Telephone 01-444-9126.

 **Hybrid Arts, Inc.**

PASSPORT TO PLAY

THE COMMODORE 64 REMAINS ONE OF THE MOST POPULAR HOME MICROS FOR MUSIC. MARK JENKINS TESTS PASSPORT'S 64 VERSION OF THE MASTERTRACKS PROGRAM FIRST SEEN ON THE APPLE COMPUTER

Being a versatile concern, Passport has managed to make its **Master Tracks** MIDI composition program run on the Commodore 64 as well as the Apple II and IBM PC. The PC version is substantially different from the other two, but the Apple and 64 versions are similar, even sharing a handbook. A sheet of addenda makes it clear that the 64 version uses the F1-F5 keys rather than cursor keys, and that a standard joystick is used for the steptime editing section known as Quikstep.

The software uses a MIDI interface (£109.95) which plugs into the cartridge expansion port and is equipped with three DIN sockets on trailing leads for MIDI In, MIDI Out and Drum Sync. The software copes with eight tracks of polyphonic playing created in real time and edited with Mix, Link, Autocorrect, Punch In/Out and other routines.

Realtime

The Song Mode allows you to link sequences together to create song files, and you can also create step-time recordings using the Quikstep section controlled by the joystick. The realtime display for each track shows track number, On/Off status, MIDI channel, Preset number (the sound you want to come up on the synthesizer played by that channel), and track name, and there's a display at the bottom of the page giving common values for Tempo (which can be changed while you're playing), Transposition, Beat Value and MIDI Thru channel value.

After recording the first track you can add between one and seven more while listening to all previous tracks, then save the result to disk. Hitting the space bar then takes you onto the main operation page, which has the same track display but which lets you get at the song editing options.

The amount of memory used and remaining is displayed and the measure number, beat number and MIDI clock number are also shown. You can mute or solo any tracks while playing back and use the F, R, >, < and Esc keys to simulate the tape recorder-like controls Fast Forward, Rewind, Single Step Forward, Single Step Rewind and

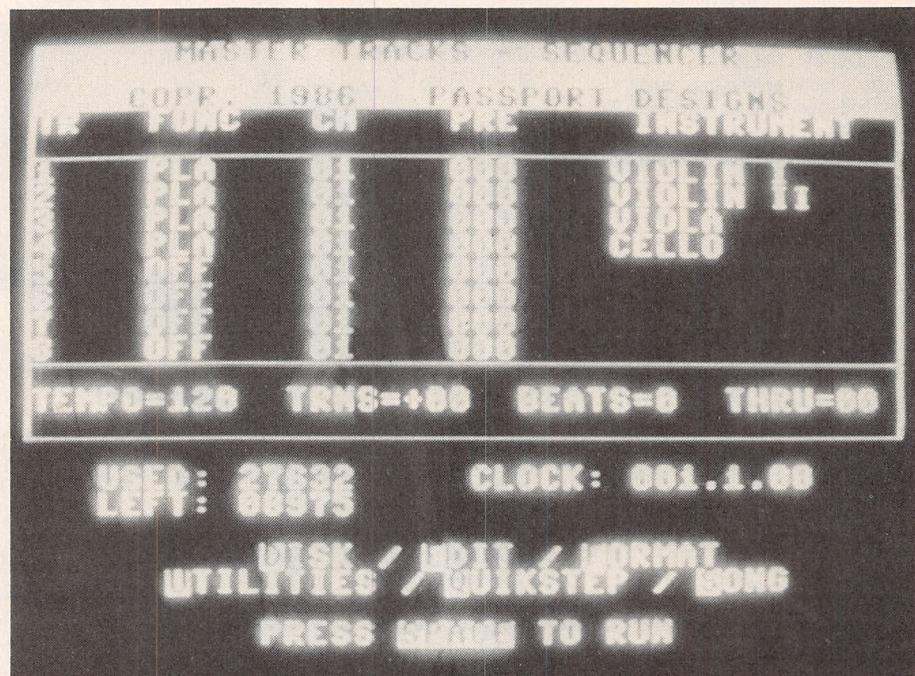
Continue. You can also punch in briefly to correct mistakes on any track and freely interchange real time and step time note entry.

Saving songs and patterns to disk is straightforward - compatibility with files from the Passport MIDI/4 and MIDI/8 packages is also available - and of course you can correct and edit both individual patterns and whole songs in many ways. On the Edit page you can Autocorrect the timing of your performance to the nearest Quarter, Eighth, Eighth Triplet and so on up to 32nd Triplets, and erase or link tracks, the latter function adding one track to the end of another. This makes it

convert real time to step time files, and of course this is useful if you want to enter just one note or MIDI control code such as patch change, pitch bend and so on into a passage. The Song page is simply a list of the sections you want to play back in the correct order, although it does usefully list the memory size occupied by each section as well as allowing you to name them.

The Active Tracks mode selects different sets of tracks to play back in each section during Song Play mode, so you can make different mixes of a song quite easily. The handbook includes brief summaries of how to use this and all the other facilities, as well as example routines for different jobs which you're likely to want to carry out such as transposing a single track, delaying a track, and so on.

With such a powerful array of features and such a reasonably-priced host



easy to build up complex repeating patterns such as ABCABCABC rather than just AAAAAAA ...

You can also copy tracks from one channel number to another, merge two tracks together (they can't be un-merged so you may like to keep independent copies of both tracks as well in case you need them), and alter the timebase for synchronised drum machines (MIDI or non-MIDI 24 or 48 pulses per quarter note).

Quikstep uses a grid-like display of note and timing values and looks complex but is probably very powerful. You can

computer, the prospects look good for Master Tracks 64. However, there's no point pretending that it's particularly cheap at £189.95, and the worse news is that it doesn't run on cheap interfaces such as the £29.95 Datel - you have to use the £109.95 Passport effort.

Still, it's worth going into your local music store for a demo of Master Tracks, and if you want to look at a similar package for comparison, C-Lab Supertrack remains my personal fave. ◀ Rittor Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.

Computer Music at its best...



MIDI INTERFACE

For ZX SPECTRUM - Compatible with 48/128K/+2

Just what the serious or amateur
musician has been waiting for.

- MIDI DELAY FACILITY
- MIDI IN/OUT/THROUGH
- STORES THOUSANDS OF NOTES
- CONTROL ANY MIDI COMPATIBLE INSTRUMENT
- FORWARD AND REVERSE SEQUENCE PLAYBACK
- FULL MIDI COMPATIBLE ASSIGNMENTS
- REAL OR STEP TIME INPUT FROM INSTRUMENT OR COMPUTER
- SUITABLE FOR HOME OR PROFESSIONAL USE
- SYNC FACILITY
- COMPLETE WITH HARDWARE/FULL SOFTWARE
- COMPREHENSIVE INSTRUCTION MANUAL
- MICRODRIVE COMPATIBLE
- EXCEPTIONAL VALUE

SOUND SAMPLER

For ZX SPECTRUM - Compatible with 48/128K/+2

- SAMPLE ANY SOUND
- SYNC FACILITY
- MIXING OF SAMPLES
- SUITABLE FOR HOME OR PROFESSIONAL USE
- SIMPLE TO USE
- REPLAY AT VARIOUS PITCHES FORWARDS OR BACKWARDS
- POWERFUL EDITING FACILITY
- ECHO, REVERB ETC.
- SAMPLE SOUND EFFECTS INCLUDED
- COMPLETE SYSTEM
- EACH SAMPLE SOUND STORED AS FILES IN MEMORY
- BANDWIDTH - AN AMAZING 17.5KHz
- OUTPUT THROUGH MOST HI FI'S
- MICRODRIVE COMPATIBLE
- GRAPHICS SAMPLE DISPLAY
- PLAYBACK FROM KEYBOARD
- REALTIME PITCH HARMONISER

Dog barking. Glass breaking. Drum beating. Car revving even make your voice sound like Mickey Mouse — it's all possible with this amazing add-on from Cheetah



SPECDRUM / AMDRUM

Digital Drum System for the Spectrum 48K/128K/+2 and Amstrad 464, 664, 6128.

As featured on
"Micro Live"
and
"Saturday
Superstore"

- 8 DIGITALLY RECORDED REAL DRUM SOUNDS
- SIMPLE TO USE - UP AND RUNNING IN ONLY MINUTES
- A TRUE DIGITAL DRUM MACHINE
- 'REAL TIME' OR ON SCREEN PROGRAMMING
- COMPLETE WITH SOFTWARE
- EXTRA SOUNDS CAN BE LOADED FROM TAPE
- CREATIVE, EDUCATIONAL AND FUN
- THE MOST EXCITING PERIPHERAL EVER DEVELOPED

- DYNAMIC FILING SYSTEM — STORE OVER 1000 PROGRAMMED RHYTHMS
- SONGS CAN BE SAVED ON TAPE
- TAPE SYNC FACILITY
- POLYPHONIC
- COMPREHENSIVE MANUAL
- JUST PLUGS IN TO MOST HI FI'S

Prices include VAT, postage & packing. Delivery normally 14 days
Export orders at no extra cost. Dealer enquiries welcome

Cheetah products available from branches of

Dixons

Harrods

John Menzies

LASKYS

NOW AVAILABLE
Latin Kit & Editor
£3.99
Electro Kit & Editor
£4.99
Afro Kit & Editor
£4.99

128 to Midi Lead
available
now at.... £9.75

Cheetah

Marketing

W.H.Smith ♦ High St. Stores and all good computer shops
or direct from Cheetah.



Dept. PCW/1/4.
CHEETAH MARKETING LTD.
1 WILLOWBROOK SCIENCE PARK
CRICKHOWELL ROAD, ST. MELLONS, CARDIFF
TEL: CARDIFF (0222) 777337 TELEX: 497455
FAX: 0222 779404

EUROPE'S LEADING COMPUTER REPAIR CENTRE

TELEPHONE (0276) 66266

TRADE ENQUIRIES (0276) 62677

TELEX 858199 Verran G



FULLY COMPUTERISED TEST AND PROCESSING PROCEDURES

Automatic Test equipment is used to assist in the repair of all leading computer products. Many of these have been designed and built by Verran and subsequently sold throughout the world. The advanced technology allows us to offer our repair services at rock-bottom prices to all our customers. No one can match us in performance and price.

Guaranteed reliability is one of the most important points in the selection of who should repair your computer. We are proud to offer our **SIX MONTH GUARANTEE**. Within the first three months we will repair any fault **FREE**. From three to six months only half the quoted trade prices would be charged if your computer developed a fault.

To record the safe receipt and despatch of your computer we have invested in the most advanced computer system available. Each customer unit is logged and checked before return. Whilst your computer is in our possession, or in transit to you, our insurance provides comprehensive cover.

To be assured that the service you get is the best available - use Verran. We always remember that **QUALITY IS NEVER AN ACCIDENT, IT IS ALWAYS THE RESULT OF INTELLIGENT EFFORT**.

SOAK RACK TESTING subjects your computer to a rigorous series of tests over a period of between 2-8 hours. Stringent quality procedures like the *soak rack* ensure the high standard of service our customers have come to expect.

UNBEATABLE DISCOUNT ON ALL COMPONENTS

Over £500,000 worth of components currently in stock.

Unfortunately we are unable to display our complete range, if you require items not displayed just give us a call on 0276-66266 and we will be pleased to quote including delivery by first class post.

SPECTRUM SPARES		COMMODORE SPARES	
Z80 CPU	2.50	6510 Processor	12.00
ULA 6C001	7.00	6526 CIA	12.00
Power Supply	6.50	6581 Sid Chip	15.00
ROM	7.00	901225 Graphic ROM	10.00
4116 RAMS	.75	901226 Basic ROM	10.00
ZTX 650	.40	901227 Kernal ROM	15.00
ZTX 213	.40	906114 House Keeper	10.00
Keyboard Membrane		6569 - VIC	18.00
Spectrum	3.00	4164 RAMS - Memory	1.00
Spectrum Plus	8.00	Power Supplies	
Metal Templates	3.00	C64	19.50
Keyboard Mats	2.00	C16X	15.00

All the above prices include VAT but please enclose a further £1.50 post and packing on all component orders.

OVER 3500 PRODUCTS REPAIRED EACH DAY...

At our Head Office in Camberley, Surrey, we provide repair facilities for leading companies such as Amstrad plc, Commodore Business Machines, Sinclair Research, Rank Xerox, Dixons, Currys, Boots, WH Smiths, John Menzies and many more. Now we are going to offer you the consumer high quality repair services at **TRADE PRICES**.

In the UK we employ 200 staff to fulfil our customers requirements in a quick and efficient manner. Factory space of 32,000sq.ft. and offices in Switzerland and Germany now make us the largest and most advanced computer repair centre in Europe. Your computer and software is worth hundreds of pounds - send it to Verran and you will undoubtedly receive the best service available.

FANTASTIC LOW PRICES ON ALL LEADING COMPUTERS

Spectrum Trade Price 19.95 NOW £5 OFF 14.95	Commodore 64 Trade Price 24.00 NOW £5 OFF 19.00	BBC B Std Brd Trade Price 30.00 NOW £5 OFF 25.00
Amstrad 664 Trade Price 30.00 NOW £5 OFF 25.00	Electron Trade Price 25.00 NOW £5 OFF 20.00	

To obtain a quotation on any other product just call (0276) 66266 quoting the advertisement reference number.

(See bottom left)

TO OBTAIN THE BEST REPAIR SERVICE AVAILABLE JUST FOLLOW THESE STEPS:

1. Send your computer securely packed, accompanied by cheque, postal order (made payable to Verran Micro-Maintenance Ltd) or quote your Access or Barclaycard Number.
2. Quote the special offer reference number displayed at the bottom of this advertisement for your £5.00 DISCOUNT on the trade prices.

LETTERS FROM OUR CUSTOMERS

"I really felt I must write and thank you for the excellent service I received." Mrs J. Gilbert, Plymouth

"I am extremely delighted and would like to thank you again for the quick and efficient service of your company". Paul Donald, Aberdeen.

TRADE PRICES
OFF ALL PRICES
£5



Verran
MICRO-MAINTENANCE LIMITED

UNIT 2H & 2J · ALBANY PARK · FRIMLEY ROAD
CAMBERLEY · SURREY GU15 2PL

SPECIAL OFFER REFERENCE - POP 107

Lightshow

John Whyte

This program for any Spectrum is a real time sound to light converter which produces appropriate sy-

metrical patterns depending on the input at the ear socket. The machine code can be loaded back in by entering *Load* "Code 32000" and *Randomize Usr 32019*.

Spectrum 128 owners will gain maximum benefit from this program as the music from a cassette recorder can be

heard through the television.

You may redesign the character that appears on screen by poking the data into locations 32010 to 32017.

If you have a Kempston 'E' Centronics interface remove it before loading the program as it may interfere.

Loader Listing

5 LET x=0 10 FOR f=32000 TO 32241 20 PRINT f;".";: INPUT y: PRINT y 30 LET x=x+y	40 NEXT f 50 IF x>20649 THEN PRINT "Error in data": STOP	60 PRINT "ALL DONE. PREPARE TAPE": FOR f=1 TO 200: NEXT f 70 SAVE "Lightshow"CODE 32000,242
---	---	--

Data Listing

32000:0	32024:125	32048:119	32072:42	32096:125	32120:125	32144:6	32168:125	32193:0	32217:126
32001:88	32025:205	32049:40	32073:4	32097:35	32121:42	32145:125	32169:33	32194:211	32218:18
32002:31	32026:224	32050:1	32074:125	32098:34	32122:2	32146:1	32170:160	32195:254	32219:35
32003:88	32027:125	32051:52	32075:119	32099:4	32123:125	32147:16	32171:90	32196:33	32220:19
32004:160	32028:243	32052:16	32076:42	32100:125	32124:1	32148:0	32172:34	32197:0	32221:16
32005:90	32029:6	32053:245	32077:6	32101:42	32125:48	32149:237	32173:4	32198:88	32222:250
32006:191	32030:11	32054:58	32078:125	32102:6	32126:0	32150:66	32174:125	32199:17	32223:201
32007:90	32031:197	32055:8	32079:119	32103:125	32127:237	32151:34	32175:33	32200:1	32224:62
32008:0	32032:6	32056:125	32080:42	32104:43	32128:74	32152:6	32176:191	32201:88	32225:2
32009:0	32033:16	32057:230	32081:0	32105:34	32129:34	32153:125	32177:90	32202:1	32226:205
32010:255	32034:197	32058:7	32082:125	32106:6	32130:2	32154:193	32178:34	32203:255	32227:1
32011:129	32035:62	32059:23	32083:35	32107:125	32131:125	32155:16	32179:6	32204:2	32228:22
32012:129	32036:0	32060:23	32084:34	32108:193	32132:42	32156:130	32180:125	32205:119	32229:1
32013:129	32037:33	32061:23	32085:0	32109:16	32133:4	32157:33	32181:251	32206:237	32230:192
32014:129	32038:8	32062:203	32086:125	32110:179	32134:125	32158:0	32182:255	32207:176	32231:2
32015:129	32039:125	32063:247	32087:42	32111:42	32135:1	32159:88	32183:62	32208:201	32232:62
32016:129	32040:119	32064:42	32088:2	32112:0	32136:48	32160:34	32184:127	32209:33	32233:144
32017:255	32041:6	32065:0	32089:125	32113:125	32137:0	32161:0	32185:219	32210:10	32234:215
32018:0	32042:7	32066:125	32090:43	32114:1	32138:237	32162:125	32186:254	32211:125	32235:11
32019:205	32043:62	32067:119	32091:34	32115:16	32139:66	32163:33	32187:31	32212:17	32236:121
32020:192	32044:127	32068:42	32092:2	32116:0	32140:34	32164:31	32188:218	32213:88	32237:176
32021:125	32045:219	32069:2	32093:125	32117:9	32141:4	32165:88	32189:28	32214:255	32238:32
32022:205	32046:254	32070:125	32094:42	32118:34	32142:125	32166:34	32190:125	32215:6	32239:248
32023:209	32047:203	32071:119	32095:4	32119:0	32143:42	32167:2	32191:201	32216:8	32240:201
							32192:62		32241:0

Programming: Amstrad CPC

Splitcol

T Bratley

Have you ever wished you could have four colours in Mode 2, eight in Mode 1 and all 27 in

Mode 0? With Splitcol you can, although the screen has to be treated as two halves.

Run the program and save the machine code with *Save "Splitcol",b,40000,109*. Set *Himem* to 39999 before loading back in and activating with *Call 40000*.

To use the routine you must supply it with two sets of 17 colour numbers for the *Inks* in the following layout.

Upper screen *Ink* vector table (&9C8B to &9C9B).

Byte 0: Colour for border.

Byte 1: Colour for *Ink* 0.

To byte 16: Colour for *Ink* 15.

Lower screen *Ink* vector table (&9C9C to &9CAC).

Byte 0: Colour for border.

Byte 1: Colour for *Ink* 0.

To byte 15: Colour for *Ink* 15.

10 REM ** HEXADECIMAL CODE LOADER ** 20 REM 30 REM 40 REM 50 MEMORY 39999 60 address=40000 70 FOR a=0 TO 10 80 sum=0:READ code\$,sum\$ 90 FOR b=1 TO 19 STEP 2	100 n=VAL("&"+MID\$(code\$,b,2)) 110 POKE address,n 120 sum=sum+n:address=address+1 130 NEXT 140 IF sum>>VAL("&"+sum\$) THEN PRINT "Data error in line ";160+a*10 150 NEXT a 160 DATA 21789C068111519CC3D7,454 170 DATA BC21789CC3DDBC118B9C,585	180 DATA CD25BD3E03328A9C2181,3EA 190 DATA 9C068111679CC3E0BC21,4B7 200 DATA 8A9C35C0119C9CCD25BD,513 210 DATA 21819CC3E6BCF987FBB7,705 220 DATA 0081519CFF000000000,26D 230 DATA 81679CAB00141404151C,28C 240 DATA 181D0C050D1606171E00,0A4 250 DATA 00000B0B001F0E070F12,06B 260 DATA 02131A191B0A030B0000,07B
--	---	--

Key Definition

Sukhbir Singh Ranu

This program enables you to define the function keys and also give definitions to control-F key combinations.

Simply run the program and enter the definitions as prompted. Note that you can only have a maximum of eight characters assigned to any key and that if you want the entry to be automatically inter-



preted then use a left facing arrow as the last character.

To disable the defined function keys

press *Run/Stop* and *Restore*. To enable the definitions once more enter *Sys 38600*.

```

1 REM ****
2 REM *
3 REM * FUNCTION KEYS *
4 REM * DEFINED *
5 REM *
6 REM ****
7 REM
8 REM * LOAD M/C DATA *
9 PRINT"PLEASE WAIT....."
10 FOR I=38600 TO 38719:READ D:T=T+D:POKE I,D
11 NEXT
12 IF T<>17179 THEN PRINT"ERROR IN DATA":END
13 REM **** M/C DATA ****
14 DATA 120,169,220,141,20,3,169,150
15 DATA 141,21,3,66,133,56,169,0
16 DATA 133,55,96,234,234,72,136,72
17 DATA 152,72,155,197,197,251,240,76
18 DATA 133,251,234,162,0,173,141,2
19 DATA 168,192,0,240,9,138,24,105
20 DATA 32,170,136,24,144,243,224,96
21 DATA 48,2,162,96,234,234,165,197
22 DATA 160,3,132,254,197,254,240,17
23 DATA 200,232,232,232,232,232,232
24 DATA 232,192,7,208,237,76,54,151
25 DATA 234,138,133,252,169,150,133,253
26 DATA 160,0,177,252,153,119,2,200
27 DATA 132,8,208,246,132,198,104,168
28 DATA 104,170,104,76,49,234,0,255
29 PRINT"J"
30 READ KEY$:
31 PRINT"ASSIGN WHAT TO ";KEY$:INPUT N$:L=LEN(N$)
32 IF L>8 THEN PRINT"** LETTER MAX. PER KEY":GOTO 32
33 FOR Y=1 TO 8
34 IF Y>L THEN P=0:GOTO 39
35 P=ASC(MID$(N$,Y,1)):IF P=95 THEN P=13
36 POKE 38399+Y+X*8,P:NEXT Y
37 X=X+1:IF X>15 THEN GOTO 30
38 N$="":GOTO 30
39 DATA "F7","F1","F3","F5","F6","F2","F4","F6"
40 DATA "C= & F7","C= & F1","C= & F3","C= & F5"
41 DATA "CTRL & F7","CTRL & F1","CTRL & F3","CTRL & F5"
42 PRINT"KEYS NOW DEFINED":SYS 38600:CLR:END

```

READY.

Save Utilities

S W Booth

This utility program for the QL allows you to save and load screens in a compressed format. To save the current screen enter *Save_Scr "Mdv1_Screen"*. The compression tech-

nique reduces a typical screen from 32K to about 12K.

To load the screen back in again, and it doesn't have to be a compressed one, enter *Load_Scr "Mdv1_Screen"*.

```

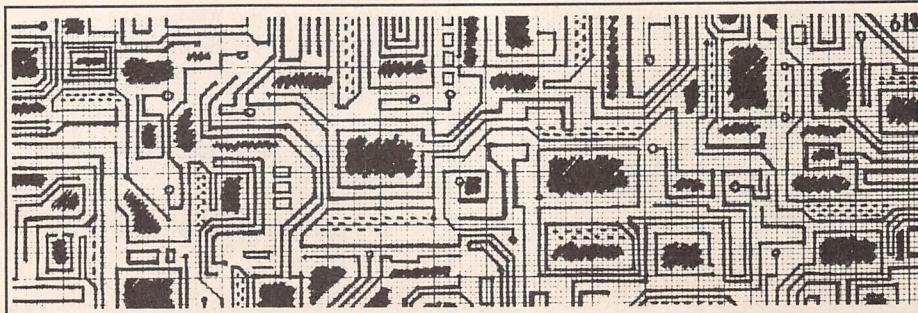
10 LET start=RESPR(332):LET checksum=0
20 FOR f=0 TO 331
30 READ datum
40 LET checksum=checksum+datum
50 POKE start+f,datum
60 NEXT f
70 READ parity
80 IF parity<>checksum:PRINT "ERROR in data.":STOP
82 SBYTES mdv1_compress_bin,start,332
86 STOP
90 DATA 67,250,0,12,52,120,1,16,78,146,112,0,78,117,0
100 DATA 2,0,30,8,83,65,86,69,95,83,67,82,0,0,176
110 DATA 8,76,79,65,68,95,83,67,82,0,0,0,0,0,0
120 DATA 0,52,120,1,22,78,146,65,246,152,0,114,255,118,2
130 DATA 112,1,78,66,74,0,103,2,78,117,18,60,0,0,222,54
140 DATA 60,255,255,112,5,78,67,38,124,0,2,0,0,120,1
150 DATA 52,19,215,252,0,0,0,2,58,19,112,0,215,252,0
160 DATA 0,0,2,183,252,0,2,128,2,106,78,186,66,102,10
170 DATA 82,4,12,4,0,255,103,20,96,224,18,4,54,60,255
180 DATA 255,112,5,78,67,74,0,102,50,120,1,96,16,18,4
190 DATA 54,60,255,255,112,5,78,67,74,0,102,32,66,4,50
200 DATA 2,54,60,255,255,112,5,78,67,74,0,102,16,112,5
210 DATA 224,66,18,2,78,67,74,0,102,4,52,5,96,160,34
220 DATA 0,112,2,78,66,32,1,78,117,52,120,1,22,78,146
230 DATA 65,246,152,0,114,255,66,131,112,1,78,66,74,0,102
240 DATA 224,112,1,118,255,78,67,12,1,0,222,102,60,42,124
250 DATA 0,2,0,0,66,68,112,1,54,60,255,255,78,67,74
260 DATA 0,103,4,112,0,96,188,83,1,24,1,112,1,54,60
270 DATA 255,255,78,67,74,0,102,172,28,1,112,1,78,67,225
280 DATA 65,18,6,58,129,84,141,81,204,255,250,96,202,42,124
290 DATA 0,2,0,0,56,60,127,254,26,129,82,141,118,255,112
300 DATA 1,78,67,74,0,102,128,81,204,255,240,112,0,96,0
310 DATA 255,120,26047
320 REMark ****
330 REMark * To use load the code in future, type: *
340 REMark * 10 start=RESPR(332) *
350 REMark * 20 LBYTES mdv1_compress_bin,start *
360 REMark * 30 CALL start *
370 REMark ****

```

Multi-save

A W Pryer

This week features the final part of the useful Multi-save utility which also features a printer utility. No more shall hours of programming go down the drain when someone trips over the lead.



Programming: BBC

<pre> 1800 EQU(3) 1810 EQU(7) 1820 EQU(131) 1830 EQU("2...DOUBLE WIDTH PRINT") 1840 EQU(31) 1850 EQU(3) 1860 EQU(8) 1870 EQU(131) 1880 EQU("3...DOUBLE STRIKE PRINT") 1890 EQU(31) 1900 EQU(3) 1910 EQU(9) 1920 EQU(131) 1930 EQU("4...ITALIC PRINT") 1940 EQU(31) 1950 EQU(3) 1960 EQU(10) 1970 EQU(131) 1980 EQU("5...SUBSCRIPT PRINT") 1990 EQU(31) 2000 EQU(3) 2010 EQU(11) 2020 EQU(131) 2030 EQU("6...SUPERSCRIPT PRINT") 2040 EQU(31) 2050 EQU(3) 2060 EQU(12) 2070 EQU(131) 2080 EQU("7...UNDERLINED ON") 2090 EQU(13) 2100 EQU(131) 2110 EQU(" 8...UNDERLINE OFF") 2120 EQU(31) 2130 EQU(3) 2140 EQU(14) 2150 EQU(131) 2160 EQU("9...EMPHASIZED") 2170 EQU(31) 2180 EQU(3) 2190 EQU(15) 2200 EQU(131) 2210 EQU("R...RESET TO DEFAULT CHARACTE R SET") 2220 EQU(31) 2230 EQU(9) 2240 EQU(20) 2250 EQU(131) 2260 EQU("ANY OTHER KEY TO END") 2270 EQU(31) 2280 EQU(0) 2290 EQU(22) 2300 EQU(132) 2310 EQU(157) 2320 EQU(141) 2330 EQU(135) 2340 EQU(" ENTER OPTION") 2350 EQU(13) 2360 EQU(132) 2370 EQU(157) 2380 EQU(141) 2390 EQU(135) 2400 EQU(" ENTER OPTION") 2410 EQU(255) 2420 .key \CHECK FOR KEY BEING PRESSED 2430 JSR &FF00 2440 CMP#ASC"1":BEQ J1 \AND BRANCH TO REQUIRED ROUTINE 2450 CMP#ASC"2":BEQ J2 2460 CMP#ASC"3":BEQ J3 2470 CMP#ASC"4":BEQ J4 2480 CMP#ASC"5":BEQ J5 </pre>	<pre> 2490 CMP#ASC"6":BEQ J6 2500 CMP#ASC"7":BEQ J7 2510 CMP#ASC"8":BEQ J8 2520 CMP#ASC"9":BEQ J9 2530 CMP#ASC"R":BEQ reset 2540 JMP end2 2550 .J1 JMP 01 2560 .J2 JMP 02 2570 .J3 JMP 03 2580 .J4 JMP 04 2590 .J5 JMP 05 2600 .J6 JMP 06 2610 .J7 JMP 07 2620 .J8 JMP 08 2630 .J9 JMP 09 2640 .reset 2650 LDA #RST MOD 256:STA &74 2660 LDA #RST DIV 256:STA &75 2670 JSR send 2680 JMP key 2690 .01 2700 LDA #CD1 MOD 256:STA &74 2710 LDA #CD1 DIV 256:STA &75 2720 JSR send 2730 JMP key 2740 .02 2750 LDA #CD2 MOD 256:STA &74 2760 LDA #CD2 DIV 256:STA &75 2770 JSR send 2780 JMP key 2790 .03 2800 LDA #CD3 MOD 256:STA &74 2810 LDA #CD3 DIV 256:STA &75 2820 JSR send 2830 JMP key 2840 .04 2850 LDA #CD4 MOD 256:STA &74 2860 LDA #CD4 DIV 256:STA &75 2870 JSR send 2880 JMP key 2890 .05 2900 LDA #CD5 MOD 256:STA &74 2910 LDA #CD5 DIV 256:STA &75 2920 JSR send 2930 JMP key 2940 .06 2950 LDA #CD6 MOD 256:STA &74 2960 LDA #CD6 DIV 256:STA &75 2970 JSR send 2980 JMP key 2990 .07 3000 LDA #CD7 MOD 256:STA &74 3010 LDA #CD7 DIV 256:STA &75 3020 JSR send 3030 JMP key 3040 .08 3050 LDA #CD8 MOD 256:STA &74 3060 LDA #CD8 DIV 256:STA &75 3070 JSR send 3080 JMP key 3090 .09 3100 LDA #CD9 MOD 256:STA &74 3110 LDA #CD9 DIV 256:STA &75 3120 JSR send 3130 JMP key 3140 .RST 3150 EQU(5:EQU(2:EQU(1:EQU(27:EQU(1:EQU(64 3160 .CD1 3170 EQU(5:EQU(2:EQU(1:EQU(27 3180 EQU(1:EQU(15 3190 .CD2 </pre>	<pre> 3200 EQU(7:EQU(2:EQU(1:EQU(27 3210 EQU(1:EQU(87:EQU(1:EQU(1 3220 .CD3 3230 EQU(5:EQU(2:EQU(1:EQU(27 3240 EQU(1:EQU(71 3250 .CD4 3260 EQU(5:EQU(2:EQU(1:EQU(27 3270 EQU(1:EQU(52 3280 .CD5 3290 EQU(7:EQU(2:EQU(1:EQU(27 3300 EQU(1:EQU(83:EQU(1:EQU(1 3310 .CD6 3320 EQU(7:EQU(2:EQU(1:EQU(27 3330 EQU(1:EQU(83:EQU(1:EQU(0 3340 .CD7 3350 EQU(7:EQU(2:EQU(1:EQU(27 3360 EQU(1:EQU(45:EQU(1:EQU(1 3370 .CD8 3380 EQU(7:EQU(2:EQU(1:EQU(27 3390 EQU(1:EQU(45:EQU(1:EQU(0 3400 .CD9 3410 EQU(5:EQU(2:EQU(1:EQU(27 3420 EQU(1:EQU(69 3430 .send 3440 LDY#0 3450 LDA (&74),Y:STA &FF 3460 .send2 3470 INY:LDA (&74),Y:JSR &FFEE 3480 CPY &FF:BNE send2 3490 RTS 3500 .commands \PRINT OUT COMMANDS 3510 LDY#0 3520 .printcommands 3530 LDA commandtext,Y:CM#255:BEQ done 3540 JSR &FFE3 3550 INY:JMP printcommands 3560 .done JMP end 3570 .commandtext 3580 EQU(13) 3590 EQU("M U L T I U T I L I T Y") 3600 EQU(13) 3610 EQU(10) 3620 EQU("C)1987 A.W.Pryer") 3630 EQU(13) 3640 EQU(10) 3650 EQU("AUTOSAVE <filename>") 3660 EQU(13) 3670 EQU("NOSAVE") 3680 EQU(13) 3690 EQU("MENU") 3700 EQU(13) 3710 EQU("COMMANDS") 3720 EQU(13) 3730 EQU(10) 3740 EQU("VERSION 1.00") 3750 EQU(13) 3760 EQU(10) 3770 EQU(255) 3780] 3790 NEXT 3800 FOR A=MAIN TO P% 3810 SUM=SUM+?A 3820 NEXT 3830 SUM=SUM-?&1417-?&1418-?&1419-?&141 A 3840 IF SUM<>108578 THEN PRINT"CHECKSUM INCORRECT-CHECK PROGRAM":END 3850 OSCLI("SAVE M-UTIL 1300 "+STR\$(P% +1)) 3860 CALL &1300 3870 *COMMANDS 3880 END </pre>
--	---	--

BALE BREAKER

CRL Group PLC, CRL House, 9 Kings Yard, Carpenters Road, London E15 2HD

COMPUTER REPAIRS (UK)

REPAIRS TO ALL MAKES OF
MICROCOMPUTERS AND PERIPHERALS

SPECTRUM	£20.00
COMMODORE 64	£30.00
BBC	£30.00
ELECTRONS	£24.00

- ★ 48 HOUR TURN ROUND
- ★ ALL REPAIRS GUARANTEED
- ★ TRADE CONTRACTS WELCOME
- ★ DISCOUNTS FOR EDUCATIONAL ESTABLISHMENTS

COMPUTER REPAIRS LTD.

2 AUSTINS PLACE
HEMEL HEMPSTEAD, HERTS HP2 5HN
Tel: (0442) 217624

?ARE YOU PAYING TOO MUCH?

Commodore 801 Printer Roms

Compare our prices with ANY of our competitors before you buy.

We can supply our original DESCENDER ROM at the affordable price of £8.95 incl.

WE CAN ALSO SUPPLY ANY ONE OF 4 OTHER OF OUR ORIGINAL FONTS AT THE SAME *unbelievable price of £8.95 each (all inclusive)*.

Or you can take advantage of our introductory offer!!

Order DESCENDER ROM plus any one other font for the extra special price of £14.95 all inclusive.

FONTS AVAILABLE NOW!!

A = Descender rom.

B = Future rom.

C = Scribe rom.

D = NLQ rom. (at least as near as the 801 will allow).

E = Bold rom.

All our fonts have true descenders!

Further fonts available soon, including printer Roms for the "ATARI 1029"

Please make all cheques/postal orders payable to D.H. BEATTY at:

Micro Computer Projects Company

FIRMWARE SOFTWARE SPECIALISTS

2-4 Langdale Grove, Bingham,
Notts NG13 8SR, England.
Telephone (0949) 39380 or 39393

ADULT COMPUTER SOFTWARE ACTION & ADVENTURE

To order please send 50p plus self-addressed envelope for catalogue, refundable on first order.

JOYSOFT
28A Bowesfield Lane,
Stockton TS3 ER



PROGRAMMERS

Have you written programs and had them turned down by the larger software houses? Have you sent in programs and had no reply? Have you written part of a program but never finished it?

We would like to hear from all types of programmers, no matter how much experience you have. We need programmers for conversion work, and to work on original ideas as part of one of our teams. We would also like to look at finished programs.

If you require further information, or have programs for publication, write to or telephone:

Black Knight Computers Limited,

P.O. Box 132
Chislehurst
Kent BR7 6JX
Tel: 01-467 7451

We guarantee a more personal service

Orders
over £30
Deduct 10%

EMPIRE SOFTWARE Dept. PCW2

118A Palmers Road, New Southgate, London N11 1SL

SPECTRUM	Our RRP Price	COMMODORE 64	Our RRP Price		
Thai Boxing	7.95	5.70	Cobra	8.95	5.99
Durell Big 4	9.95	7.20	Light Force	8.95	4.99
Buzcoka Bill	8.95	6.70	America's Cup	9.95	5.99
Scooby Doo	7.95	5.70	Scooby Doo	9.95	6.99
Avenger	9.95	7.20	Bazzoka Bill	9.95	6.50
Cyborg	8.95	6.70	Boulderdash Con		
Vera Cruz	8.95	6.70	Set	9.95	6.50
Ace of Aces	8.95	6.70	Bobby Baring	9.95	5.50
Break Through	8.95	6.70	Hot Wheels	9.95	5.90
Kat Trap	8.95	6.70	Alleycat	8.95	5.50
Aliens	9.95	7.20	Repton 3	9.95	5.99
Infiltrator	9.95	7.20	Xevious	9.95	5.99
Academy	9.95	7.20	Crystal Castles	9.99	5.99
Galvan	7.95	5.70	Sentinel	9.95	6.50
Orbix	7.95	5.70	Highlander	8.95	4.99
Eat Worm	9.95	7.20	Great Escape	8.95	5.99
They Stole a Million	8.95	6.70	Knuckledusters	9.95	6.50
Cyrus II	11.95	9.95	Trivial Pursuit	14.95	9.99
Street Hawk	7.95	5.70	Paradise 48K	9.95	4.39
Knight Rider	7.95	5.70	Stainless Steel	8.95	3.99
Pub Games	9.95	7.20	Battle of the Planets	9.95	3.99
Hardball	8.95	6.70	Cop Out	8.95	3.99
Druide	7.95	5.70	Tir-Nanog	8.95	3.99
Rogue Trooper	9.95	7.20	Jeff Capes — Strongman	8.95	3.99
Mag Max	7.95	5.70	Eddie Kids Challenge	8.95	3.99
Mail Storm	7.95	5.70	Brian Jacks Super Star	8.95	3.99
Yie ar Kung Fu II	7.95	5.70	Zoids	8.95	3.99
Paper Boy	7.95	5.70	Samantha Fox Poker	9.95	4.39
Tau Ceti	9.95	7.20	3 Weeks in Paradise 48K	9.95	3.99
They Sold a Mill. II	9.95	7.20	Mega Hits (10 games)	9.95	5.90
Bomb Jack II	7.95	5.70	Pole Position	7.95	2.99
Star Raiders II	9.99	7.20			
Impossaball	8.95	6.70			
Deep Strike	9.95	7.20			
Legend of Kage	7.95	5.70			
Star Games I	9.95	7.20			
Terra Cresta	7.95	5.20			
Krakout	7.99	5.70			
Stargames	9.95	7.20			
Arkanoid	7.95	5.70			
			Creator	22.95	18.95

SPECIAL OFFERS

Our RRP Price	SPECTRUM	Our RRP Price
Zoids (disc)	12.95	3.99
Strange Coop	7.95	2.99
World Cup Soccer	7.95	4.99
Cyberun	4.95	4.99
I.D.	8.95	3.99
Revolution	9.95	3.99
Lord of the Rings	15.95	8.99
Sky Fox	8.95	3.99
Formula One	7.95	4.99
Moon Cresta	7.95	2.99
MS Pacman	7.95	2.99
Galaxion	7.95	2.99
Project Future	7.95	2.99
Star Glider	14.95	9.99
Elite	14.95	9.99
Art Studio	14.95	9.99
Trivial Pursuits	14.95	9.99
Superbowl	9.95	3.99
Legend of Kage	7.95	4.99
Rebel Planet	7.95	3.99
3 Weeks in Paradise	9.95	4.39
Paradise 128K	9.95	4.39
Stainless Steel	8.95	3.99
Battle of the Planets	9.95	3.99
Cop Out	8.95	3.99
Tir-Nanog	8.95	3.99
Jeff Capes — Strongman	8.95	3.99
Eddie Kids Challenge	8.95	3.99
Brian Jacks Super Star	8.95	3.99
Zoids	8.95	3.99
Samantha Fox Poker	9.95	4.39
3 Weeks in Paradise 48K	9.95	3.99
Mega Hits (10 games)	9.95	5.90
Pole Position	7.95	2.99

Hotshots compilation of 4 titles only £4.99

MINDSHADOW ★ FIGHTING WARRIOR ★ GYRON ★ SHADOWFIRE

Please make cheques/P.Os payable to Empire Software. P&P included in UK, Europe add 75p per tape

THREE GREAT PROGRAMMES FROM ASIRUS SOFTWARE

POOLSMASTER

GUARANTEED WINS • GUARANTEED WINS • GUARANTEED WINS

ASIRUS SOFTWARE presents the most up to date method for winning the POOLS ever devised. So much so that the company has decided to LIMIT the number of copies available to 3,000 which means it's FIRST COME FIRST SERVED. Whatever method you have used in the past, whether it be FORM, MAGIC NUMBERS, or UP/DATING OF DATA you can now forget: WHY, because POOLSMASTER eliminates all CHANCE, giving you a method which can be used ALL YEAR ROUND, with consistent returns of DIVIDENDS.

Developed over the past 2 years accuracy was our aim in finding a WINNING method, we did it, and called it POOLSMASTER. Coupled with easy to follow on screen instructions, which enables the user to see how POOLSMASTER operates, and why it works, and also showing how to STAKE and PERM your coupons to give MAXIMUM returns, making it a complete package.

To obtain a copy of POOLSMASTER, and remember there are only 3,000 copies available, fill in the form below, together with a remittance of £30.

GUARANTEE

ASIRUS SOFTWARE guarantees that POOLSMASTER will give you a winning dividend/dividends within 12 weeks or less. Should POOLSMASTER not perform as stated above, then return the program for a £30 refund.



PLOT THE BALL

ANOTHER FIRST FROM ASIRUS

This UNIQUE program can be used throughout the year, giving hours of enjoyment. Using your skill, and aided with PLOT THE BALL, you could pit your way to a JACKPOT of one of the MAJOR JACKPOTS won every week on SPOT THE BALL, which is sponsored by LITTLEWOODS, VERNONS, and ZETTERS POOL & MATCH. Change from the usual POOLS, and POKER, and let PLOT THE BALL help you to pin point your crosses on your SPOT THE BALL coupon with greater ACCURACY than just guessing as to where the centre of the ball may be located. Supplied with each program is a GRID, and together with DATA fed to the computer, a possible LOCATION or LOCATIONS will be displayed on SCREEN, giving you the EDGE over people who just take pot luck with their CROSSES. ALL INSTRUCTIONS ARE GIVEN ON SCREEN at all stages of the PROGRAM, making it very easy to use.

To obtain a copy of PLOT THE BALL, fill in the form below, together with a remittance of £25.

NOTE: With every PLOT THE BALL program dispatched, we supply PROVEN NEAR MISSES, which were WON using the above program.

ASIRUS SETTLER

THE FIRST COMPLETE RACING PROGRAM

ASIRUS SOFTWARE now offers a complete RACING PACKAGE containing everything you will ever need, in your pursuit of backing WINNERS. But like all things, to do a good job, you need good tools, and we have the best, and we have the best.

• HORSE FORMULATOR: Use for NATIONAL HUNT and FLAT, HANDICAP and NON-HANDICAP races. Based on a METHOD known to all RACING, together with the DATA from DAILY or RACING PAPER, and the computer will select the HORSE with the BEST chance of WINNING.

• GREYHOUND FORMULATOR: Use for any TRACK, OPEN and GRADED RACES. Just type in DATA asked for, and the COMPUTER will give RATINGS for all dogs, together with its best SELECTION.

• SETTLER: This powerful SETTLER will SETTLE SINGLE and MULTIPLE bets to any STAKE and S/P. No need to work out your bets on paper.

• PERMLATOR: To perm bets which have more than one SELECTION in a race, useful for working out DOUBLES, TREBLES, 4-FOLDS and MULTIPLE PERMING.

• WINNING PERCENTAGE: For the HORSE and GREYHOUND FORMULATORS. This depends upon the ACCURACY of the DATA fed in, but the approximate percentage runs between 60 and 75 per cent.

To complete the package all INSTRUCTIONS can be called onto SCREEN while the program is running. To obtain a copy of THE ASIRUS SETTLER, fill in the form below, together with a remittance of £20.

I enclose cheque/P.O. for £.....

PLEASE SEND ME: (TICK ✓)

(All programmes supplied on cassette).

□ POOLSMASTER: available for all Spectrums, Amstrads, CPC's & Commodore 64/128

□ PLOT THE BALL: available for all Spectrums, Amstrads & CPC's only.

□ ASIRUS SETTLER: available for all Spectrums, Amstrads & CPC's only.

PO's/CHEQUES PAYABLE TO ASIRUS SOFTWARE (PRICE INC. POST & PACKING).

ASIRUS SOFTWARE

54 DOVERHOUSE ROAD, PUTNEY, LONDON SW15 5AU. TEL: 01-878 2641

NEVIS



since 1970

ALL DISCS TESTED INDIVIDUALLY 100% GUARANTEED

5 1/4"	S/S DD	10'S	£8.00
	D/S DD 96TPI	10'S	£8.50
3 1/2"	S/S DD	10'S	£15.95
	D/S DD	10'S	£18.95

FREE LIBRARY BOX WITH 10'S - V.A.T. AND POST/PACK INCLUDED

BULK PURCHASE DISCS

5 1/4"	S/S DD	50	100	250
	D/S DD (96)	£27.50	£50.00	£120.00
3"	CF2	10'S	£27.00	
3"	CF2	5'S	£14.00	

All discs of major European manufacture, complete with Hub Rings, Labels etc

STORAGE BOXES

Lockable, anti-static storage box, holds 50 x 5 1/4" discs complete with dividers, keys, etc

SPECIAL OFFER £7.99
or only £2.50 when purchased with 50 discs.

NEVIS RECORDS LTD.

76 MUSWELL HILL ROAD

LONDON N10. 01-883 7656

See us on Prestel, page 258880082



Message Scroller

Simon T Goodwin

This short routine for the Amstrad CPC's allows messages to be smoothly scrolled across any row between 1 and 25.

```

10 REM -----
20 REM      MESSAGE SCROLLER
30 REM      by ST Goodwin 1987
40 REM -----
50 REM
60 MEMORY 42299
70 FOR n=42300 TO 42409
80 READ a$
90 POKE n,VAL ("&" + a$)
100 NEXT
110 REM CALL 42300, "message", row
120 REM
130 DATA DD,7E,00,32,A3,A5,DD,6E

```

```

140 DATA 02,DD,66,03,7E,47,23,5E
150 DATA 23,56,C5,D5,1A,26,14,3A
160 DATA A3,A5,6F,CD,75,BB,1A,CD
170 DATA 5A,BB,06,04,C5,CD,19,BD
180 DATA CD,79,A5,C5,D5,CD,1B,BB
190 DATA D1,C1,38,2F,C1,10,ED,D1
200 DATA 13,C1,10,D6,C9,21,B0,BF
210 DATA 11,50,00,3A,A3,A5,47,19
220 DATA 10,FD,11,00,CO,06,08,C5
230 DATA E5,D1,23,01,4F,00,1A,ED
240 DATA B0,12,01,B0,07,09,C1,10
250 DATA EE,3D,C9,C1,D1,C1,C9,00
260 DATA 00,00,00,00,00,00,00,00

```

The syntax is `A$="message": Call 42300,@a$,row`.

The message can be up to 255 characters long. The routine was designed for Mode 0 but can be used in Mode 1 if you change the 14 in line 150 to 28 and the 04 in line 170 to 02.

Exchange

Alan Thomas

Exchange for the Psion Organiser keeps a record of the exchange rate for any country the user may visit, and converts

the local prices into Sterling. Another calculator memory is used to store the exchange rate so this may be updated at any time (from the programme itself).

```

EXCHANGE:
LOCAL M%,P,R,R$(30)
UDG: (0,6,9,8,28,8,9,31,0)
MENU:::
M%=MENU("Convert,Rate")
IF M%=1
CONVERT:::
CLS
PRINT"Enter price..."
INPUT P
R=P/M7
CLS
PRINT"Rate:",M7

```

```

R$=FIX$(P,2,11)+" = "+CHR$(0)+FIX$(R,2,15)
VIEW(2,R$)
GOTO MENU:::
ELSEIF M%=2: PRINT"Enter rate...""
.INPUT M7
GOTO CONVERT:::
ENDIF

udg:(x%,a%,b%,c%,d%,e%,f%,g%,h%)
POKEB $180,64+x%*8:POKEB $181,a%
POKEB $181,b%:POKEB $181,c%
POKEB $181,d%:POKEB $181,e%
POKEB $181,f%:POKEB $181,g%
POKEB $181,h%

```

Renumber

M Fermor

The following program for the C64 is a basic renumber facility. To use enter `Run 63744`, where `L` is the starting number and `B` is the increment number.

```

63744 REM RENUMBER
63745 L=100:B=10:S=43
63746 S=PEEK(S+1)*256+PEEK(S)
63747 IF PEEK(S+3)=249 THEN END
63748 RX=L/256:POKE S+3,RX
63749 POKE S+2,L-(RX*256)
63750 L=L+B:GOTO 63746

```

Programming Spotlight – Magic

Stuart Slater

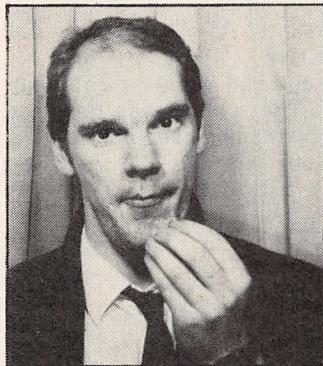
Programming Spotlight is where long programs are featured and offered to sale to you, the reader, by the author. Programs featured in this spot become the copyright of Popular as usual, for the sum of £10. We reserve the right to set a reasonable price for the programs on offer.

Magic is a two level graphical adventure where it follows the adventures of a freelance druid and his exploits. You have the option of casting water, fire or other spells to defeat the roaming monsters while seeking to escape from that level.

So, for a copy of Magic on the Commodore +4 and C16 send £2.25 to Stuart Slater, Programming Spotlight,

Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.





with Kenn Garroch

Tallying up the chips

C Smith of Shipley, West Yorks, writes:

Q I own a Mannesman Tally MT80+ and I am trying to find out the type number of the two 2K(?) buffer chips for which there are two 24 pin sockets.

A Hmm difficult but at a guess, they could be 4118, 8192 bit Ram chips, unless any of our readers know better. Two of these would give 2K by 8 bits of buffer space and you can obtain them from Maplin Electronic Supplies Ltd PO Box 3, Rayleigh, Essex, part No. QQ05F at £5.45 each.

File transfers

Brian Sayers of Finglas, Dublin, Eire, writes:

Q I have a problem concerning data files on the Commodore 64. I have data stored in program binary files in Ascii format and I wish to use them on the Apple II, Amstrad 64/128, and Spectrum computers. Do you know if there is a way to transfer the files between the Commodore and these machines? One initial problem I see is the different format of the discs, or could it be done via the ports?

A The only realistic method would be to obtain RS232 ports for all the machines. For the Spectrum,

Amstrad, and C64, these are add ons that connect to the user/expansion ports. The Apple II version is a board for one of the expansion slots inside the machine.

With RS232 connections, you could transmit the data a byte at a time to the other machines. You would probably have to load the data files directly into the memory of the 64, Peek each byte and then transmit it via the RS232. Most RS232 connections come with some sort of terminal program that will allow data received to be stored in data files. Off hand, I cannot think of any other method since, as you say, the disc formats are wildly different and there is no other standard connection that is available for all the machines in question.

Lost routine

B P Smith of 3 Queens BFPO 38, writes:

Q I am wondering if you can assist me with a problem I have. I am writing a machine code program for the Spectrum. The program involves the use of the machine code version of the Basic Screens and Attr.

I have been using two routines for the Screen\$: CD 3825, and CD F12B used with the print pos in the BC reg and the result in A.

Unfortunately, if these are called repeatedly, an out of Memory Error occurs.

I have not found a Rom routine for the Attr function and would be grateful if you could tell me where it is.

A The out of memory error is due to the fact that the Screen\$ function uses the calculator and this makes use of the workspace. If the workspace is not regularly cleared then 'out of memory' can be the result. The way around this is to call the Rom routine at 5823 after doing the Screen\$, to clear the workspace and calculator

stack. After calling \$F12B, the result is not in the A register as you state but is pointed to by DE so LD A,(DE) gets the character value obtained by Screen\$. If you then save this, and call 5823 to clear up any mess, then retrieve the character value, you can take action on it and not suffer from out of memory problems.

The Attr function is located at \$8325 and takes the line number in C and the column in B. After calling the routine, the attribute value is at the top of the calculator stack and maybe loaded into the A reg with Call \$D52D. The value obtained takes the form 128*(flash number)+64*(bright number)+8*(paper colour)+(ink colour).

best way to use this method of protection is to place Rems at strategic places in the program and put 21s after them forcing anyone who wants to see the program to search through and find them all. Since this is not too difficult, it's not a very good protection method.

An alternative which is a little better is to load your program, find out its length in bytes, and then set Page to something else such as &1100. The use *Save to save the code from &1100 to the end of your program. The ordinary load command will not work properly now since there is a load of gunk attached to the bottom of the program. To load the program, you need to know the starting address, in this case &1100, and the correct value of page for the program. So to load it, use *load name &1100 and then set page to &1900 or whatever you used.

The disadvantage with this method is that the details of load address and length etc. are stored in the directory information on the disc. To stop these being listed, the following program can be used. What it does is insert a VDU disable character into the directory listing for the first file on the disc. Make sure that this is a dummy i.e. just a name since it can't be loaded easily. To find the first file on the disc, use *Info**, and the first file will be at the top. Of course, anyone with this program can undo the protection so you will have to fiddle with it a little to fool them.

```
10 REM PROTECTOR
20 DIM BLK 255
30 DIM PARA 10
40 PROCRWIDISC(0,0,1,0)
50 ?(BLK+8)=21
60 PROCRWIDISC(0,0,0,0)
70 END
80 DEFPROMRWIDISC
  (T,S,RW,DRV)
90 REM READ IS RW=1 TAKE
  GREAT CARE SINCE GETTING
  IT WRONG CAN MAKE A MESS
  OF THE DISC BACK IT UP
  BEFORE USING THIS
100 LOCAL RDWT
110 IF RW=1 THEN RDWT=&4B
  ELSE RDWT=&4B
120 ?PARA=DRV
130 !(PARA+1)=BLK
140 ?(PARA+5)=3
150 ?(PARA+6)=RDWT
160 ?(PARA+7)=T
170 ?(PARA+8)=S
180 ?(PARA+9)=&21
190 A%=&7F
200 X%=>PARA MOD 256
```

A There are a couple of solutions to your problem, unfortunately, they will not stop the dedicated 'hacker'. The simplest way to stop the program from listing is to turn off the VDU driver as the program lists. This is done by inserting a value of 21 in a Rem statement. So, if the program starts with '10 Rem unlist' then ?(PAGE+6)=21 stops line 10 from being listed.

Unfortunately, if there is a line 20, List 20 does not stop line 20 from being seen. The

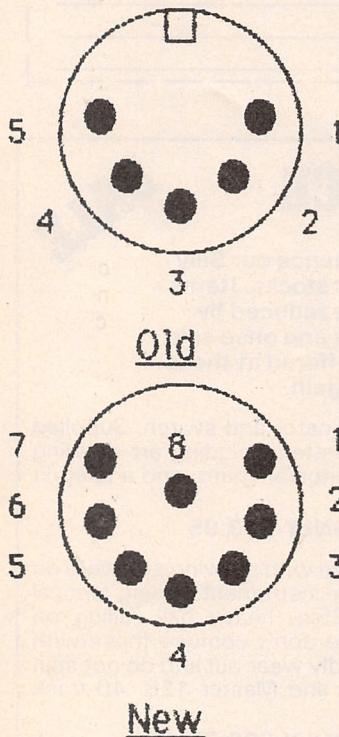
210 Y%PARA DIV 256
220 CALL &FFF1
230 ENDPROC

C64 amplified

JK Cartwright of Tenby, Dyfed, writes:

Q I want to know how I can output sound from my C64 to an amplifier. What is the wiring involved, and is there any risk of damaging the computer?

A There are two layouts for the audio video outputs on the Commodore 64. Older machines have a five pin connection, the newer machines, an 8 pin. Looking at the back of the machine, the socket you need is the first one to the right of the RF output. Check if this is five or eight pins and use the following connections.



Old layout
1 Luminance
2 Ground
3 Audio out
4 Video out
5 Audio in
New layout
2 Video out
4 Ground
6 Audio out
8 Choma

To connect your 64 to a hi-fi, take the audio output and ground and connect to one of the inputs of your amplifier: on most amps, the ground is the outside connection on the

phono plug. The input to use is either the tuner or tape (either channel since it is mono sound). In technical terms, you should use an amplifier input with about 1KΩ impedance. If you use a higher impedance, say the input for the record deck, the sound will be very loud and distorted. Try a few and see which is best, you can't do any damage to your computer if the amplifier is fairly modern (i.e. it's not an ancient valve design).

Best games

G Thornton of Castleford, West Yorkshire, writes:

Q Out of the following computers, which one has the better graphics, sound and games software: the Amstrad PC1512, the Atari ST, or the Commodore Amiga.

A Also could you tell me how many colours are there on a colour printer, and do black and white printers print shades?

A Of the three, the best graphics and sound are probably to be found on the Commodore Amiga. Unfortunately, this machine has not sold as well as the Atari ST. The PC 1512 is nowhere in sight in comparison.

A Colour printers come in two main varieties; ribbon and ink jet. The former is the most common and uses a four colour ribbon, divided in the same way as a two colour typewriter ribbon. The colours are usually red, blue, yellow, and black and can be combined to produce shades of other colours. Ink jet printers spray the ink onto the paper and are a little quieter than the dot matrices used with ribbons. Again, the three primary colours and black are used to produce mixtures for other colours.

Black and white printers can certainly print in shades and most screen dump programs use a bit pattern or shade for each of the possible screen colours.

T199/4A cartridges

M Hopkins of Willenhall, West Midlands, writes:

Q I have just been given a T199/4A which, unfortunately, doesn't work. When I switch it on, the screen just remains black (I assume it's black, it actually appears to be dark green). The logo is not appearing and pressing the keyboard doesn't help. I realise that you mainly deal with programming but you were the only person I could think to ask.

A As far as I remember, the T199/4A requires a cartridge before it will work properly. The cartridge contains the Basic operating system and if it isn't there or is not inserted properly, the machine doesn't work. You may try checking the power supply, fuses etc. Apart from this, my memory is a little hazy (it was three or four years ago), so if any one else has any ideas don't hesitate to get in touch.

More ST monitors

Peter Fellows, Technical Director of Software Express, 514-516 Alum Rock Road, Alum Rock, Birmingham writes:

Q With reference to your reply to the letter from Mr Sean L'Estrange in the issue of PCW dated 26th Feb, I would like to correct your statement concerning colour monitors and the Atari ST.

A I would agree entirely with your comment concerning monochrome monitors, but I regret that any RGB monitor will not do. The Atari ST requires RGB analogue (sometimes called linear) and monitors which are RGB TTL or RGBI will either not work at all or will not represent the colours properly. May I also point out that the 520 STM and the STFM do have composite video (colour) though the quality is not as good as the RGB signal. Some 1040 manuals also indicate that composite video is available on the 1040 - this is not the case.

Unfortunately, we are not familiar with the Chroma monitor but we have successfully connected the ST to a variety of monitors and TV/monitors, from the low cost Fidelity to the Sony Professional. If we can be of any assistance to your readers, please let us know. Keep up the good work.

A What would really be handy would be a list of those monitors that do work and those that don't.

Commodore pens

P Hudson of Eckington, Sheffield writes:

Q I would be very pleased if you or any of your readers could tell me where I can purchase some pens for the Commodore 1520 printer plotter as the shop where I previously bought them no longer stocks them.

A As far as I know, these are the same pens as used in the MCP 40 and the Tandy printer plotter. Tandy say they stock the pens for their machine so the best thing to do would be to go along to your local Tandy store and check that they are the same (they should be). If they are not in stock, you should at least be able to order them.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW, 12-13 Little Newport Street, London WC2H 7PP*.

FREE SOFTWARE ...

Is what you get when you buy an Amstrad PCW, but how many people make the most of it? Now, for the first time, this double package from two of Britain's most experienced computer authors takes the lid off the PCW's hidden power:

- **WORD PROCESSING:** everything you always wanted to know about templates, layouts, standardised forms, odd-sized formats — from the ABC of LocoScript to the sophisticated techniques of the modern office
- **CP/M:** sensible working methods for a secure and efficient system
- **GSX:** complete details of how to get presentation-quality graphics from straightforward Basic programs
- **LOGO:** graphics and list processing for the first time user
- **BASIC:** your own suite of business programs including a database, accounts program, bank account record, invoice creator and many more.

Practical Amstrad Word Processing and The Amstrad Companion — 440 pages of ideas that will turn your PCW into the power house it was meant to be! You can obtain the books at only £6.00 each or an amazing price of £10.00 for the two including p&p.



To Theresa Lacy, Sunshine Books
12/13 Little Newport Street
London WC2H 7PP

Please send me _____ copies
of practical Amstrad Word
Processing and Amstrad Companion
(both for £10 inc. p&p)

I enclose a cheque/postal order for £_____ payable to Sunshine Books

Alternatively please debit my Visa Access
American Express

Account Number _____
Signed _____
Name (capitals please) _____
Address _____

SPECTRUM — AMSTRAD — COMMODORE NOBLES COMPUTER REPAIRS

* Repairs carried out by our own engineers on site.
* All repairs carry a 4 MONTH GUARANTEE

For estimates phone or send your computer to Derek at NOBLES.

Spectrum Plus £18.95 inc parts
post and pack £24.95

48K upgrade from £22.50 plus parts

Also repair specialists for Amstrad, Commodore 64/Vic 20,
BBC and MSX computers

NO HIDDEN CHARGES

★ SPECIAL OFFER ★ 2 FREE GAMES WORTH £12

with each Spectrum repair Trade/School and Club discounts arranged.

* For free, no obligation estimates phone or send your computer to NOBLES for the fastest, cheapest repairs in ESSEX and Nationwide!

FULL RANGE OF SPECTRUM GAMES eg Z games £1.99
PLEASE PHONE FOR ORDER DETAILS



14-17 Eastern Esplanade
Southend-on-Sea
Essex

0702 63377/8

63336/7/8/9

7 days a week, 24-hour Answering Service

Main repairers for
Amstrad in the UK



— ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI —

SILLY PRICE SALE

We are moving, hence our Silly Price Sale to clear stocks. Items listed below are reduced by ridiculous margins and once sold out can never be offered at these prices again.

BBC LIGHTPEN with LED indicator and switch. Supplied bundled with a pack of 4 cassettes including art drawing software, a sprite generator/editor/animated and a teletext screen creator/editor.

Our Silly Price ONLY £13.95

BBC TRACKERBALL complete with drawing software on disc only. These are precision instruments using optical sensing and have a large 2.25in. heavy ball rolling on hardened steel bearings. Please don't confuse these with potentiometer types which rapidly wear out and do not spin freely. Works with BBC B, B+ and Master 128. 40-track 5.25in. disc supplied.

Our Silly Price ONLY £23.95

AMSTRAD TRACKERBALL. Same specification as above but with software supplied on 3in. 40-track disc. Also runs joystick operated games directly giving amazing arcade-like action! Suitable for the 464, 664 and 6128 computers.

Our Silly Price ONLY £24.95

Offers available only while present stocks last. Please send your order with cheque, P.O. or Access number to the address below, including £1.05 to help towards P&P. All orders executed in strict rotation, regret no telephone orders accepted on these offers.

DATAPEN MICROTECHNOLOGY LTD,
Kingsclere Road, Overton, Hants RG25 3JB

Starting up the micro music

Mark Jenkins looks at *Midisoft* for the ST, a good package for those new to computer music

The *Midisoft* package for the Atari ST micros is another in the line of simplified, beginners' Midi composition systems which inexpensively introduce you to the use of Midi synthesisers and effects. At £99.95 it's in the same price bracket as *EZ-Track* from the Hybrid Arts corporation and Steinberg's more basic packages, and so compares well to Steinberg's *Pro-24*, Hybrid's *Miditrack* and C-Lab's *Creator* which are intended for the professional market and which all nudge the £300 mark.

In what ways is *Midisoft* simplified? Well, like the other beginners' packages, it allows you to record many tracks of Midi information and play them back as one pattern simultaneously, but it does not allow you to record more patterns and chain them together to create a whole song. In other words, you can write a very lengthy and interesting verse, but you're in trouble when you want to work on the chorus.

However, the degree of complexity available within that verse can be quite staggering, with 32 tracks each set to any of the 16 Midi channels available for recording, playing, fast forward and rewind, pause and various editing functions.

The familiar Gem environment is used and there are five menus, Desk, File, Setup, Edit and Midi. The Setup menu

"Midisoft, like other beginners' packages, allows you to record many tracks of Midi information and play them back as one pattern simultaneously, but you can't chain them together to create a song"

includes a useful fast mouse option which doubles the ratio of cursor movement to mouse movements for when you're really familiar with the package, and this section also offers auto rewind to the point at which you started recording, beat (to select the number of beats per measure and number of count-in measures before recording begins), clock (internal or external) and so on.

On the Edit page you'll find the options of moving, copying, and combining tracks, inserting, deleting, pasting, erasing and transporting, time correcting, and going into step time recording. On



the Midi menu you'll find the controls for tune up and other requests to be sent out to the connected synths, song select for external devices which can respond to this signal, and so on.

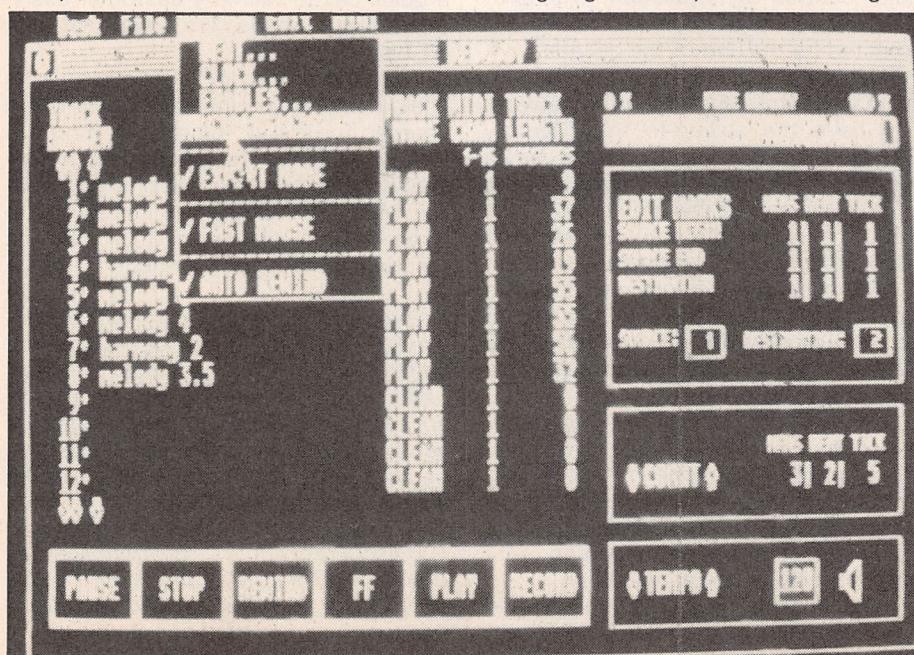
Let's assume we're in expert mode (no warnings!) and using Fast Mouse, zipping around the *Midisoft* command page with unnerving speed. First you'll want to label all the tracks you're working on, and a generous 24 spaces per track are available. You can solo one track to listen more closely to what it's doing, and select any Midi channel for any track. Free memory is displayed and a new tempo from 12-280 BPM can be entered from the ST keyboard while in stop or while playing.

On the right of most screens on the package you'll see the Edit marks display which defines two points between which various functions operate. You can cut the section between the two edit marks out and paste it elsewhere simply by typing in a destination in terms of track number, measure, beat and "tick". In the absence of a loop function this can be used to create repetitive patterns fairly quickly. The audible metronome can be turned on and off, and you can enable or disable recording of velocity information. The package comes with a well-written handbook which contains a glossary of terms plus several useful examples of typical music routines.

Overall, *Midisoft* provides reasonable value for money. It will certainly control as many Midi synths as you're likely to be able to afford, and teach you most of what you need to know about Midi recording and editing. However, if you want to go on to composing complex songs (or even not-so-complex songs) you'll eventually find its lack of a song arrange mode frustrating and will want to move on to something more versatile and (unfortunately) more expensive.

Ritter Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.



How to beat the Telecom system

Most computer communications enthusiasts will have experienced the horror of the first quarter's modem-owning phone bill. Until recently users were stuck with BT's charging structure. Here, Steve Gold looks at Mercury, does his sums and sees his bank manager smile

Very large telephone bills for those involved in communications are not uncommon, often forcing the hapless enthusiast to cut down on his/her activities or worse still, stop altogether.

Some weeks ago in this column, we looked at ways of logging your call-times so that the phone bill needn't be too much of a shock.

Is there an alternative to such drastic action? If most of your calls are local (as is the case with Prestel and Micronet) then your bills will have to remain as they are, for the time being at least.

If, on the other hand, many of your calls are trunk and if appropriate, international, then help is at hand in the form of Mercury Communications with its 2200 service.

Contrary to popular belief, Mercury isn't all big business communications via dishes and fibre optic cable. Mercury's licence, granted by the Office of Telecommunications (Oftel) clearly allows it to branch into most parts of the communications market.

Mercury 2200 service works like this. By calling a simple local access number (usually 131) users are routed directly into the Mercury network. You then key in your supplied Mercury ID, followed by the number required, complete with the 'standard' national dialling code. Within a few seconds, your call is zipped across to the appropriate local centre, and back onto the local BT network to complete the call.

All of this takes place under control of the phone. As far as the users are concerned, they simply pick up the phone and, if a trunk call is required, dial the full number, prefixing it with a press of the blue M (for Mercury) button. All subsequent switching is handled under the Mercury smart phone's control.

Call charges are between 10 and 25 per cent cheaper when routed on Mercury. Savings are greatest where the call is routed totally over the Mercury trunk network. Typically, a 90 second cheap rate call from Leeds to London costs just 5.7p, compared with 8.8p via BT circuits.

Calls to the local Mercury access node are free, thanks to a reciprocal agreement between Mercury and BT.

Currently, the Mercury 2200 network covers about 40 per cent of the UK's

"Call charges are between 10 and 25 per cent cheaper when routed on Mercury. Savings are greatest where the call is routed totally over the Mercury trunk network."

TIERS	Calls to National Destinations		
	PRIME	STANDARD	ECONOMY
1. Calls over 56km (35 miles) to destinations shown in Table 1	0900 - 1300 Monday to Friday	0800 - 0900/1300 - 1800 Monday to Friday	All other hours Monday to Friday weekends and public holidays
2. Calls over 56km (35 miles) to other destinations	11.155	8.480	3.750
3. Calls up to 56km (35 miles) to destinations shown in Table 1	11.730	8.750	4.100
4. Calls up to 56km (35 miles) to other destinations	9.720	7.452	2.500
5. Calls made to destinations within the Local Call Area	10.000	7.500	2.500
	9.720	7.452	2.500

telephone subscribers. The Mercury network forms an approximate figure of eight, stretching from London to Birmingham, up to Manchester, across to Leeds, and then down to Bristol (again passing through Birmingham) and thence back to London. Network spurs currently exist which extend service from London to Cardiff, Chelmsford, York and Edinburgh.

Later this year Mercury will serve most major centres of population, with progressive coverage of most of the UK expected by the end of the decade.

Telephone subscribers in or close to the main centres shown on the network map have the ability to use Mercury 2200 service now. Further details can be obtained free of charge from the number given at the end of this article.

In order to use the network, Mercury 2200 subscribers must purchase at least one Mercury 'smart phone' for £37 plus Vat. On top of this, the rental of an ID on the Mercury network will cost you £7.50 plus Vat a year – this charge is payable each year in advance.

The smart phone is an exciting instrument in its own right. Despite its relatively low price, the phone has advanced facilities such as 50 memories, last number redial and on-hook dialling. Once purchased, the phone becomes your own property to use as you wish.

Thus, in your first year, you should make call savings of at least £45–50

plus Vat on your phone bill for the system to pay its way. Second and subsequent years require only £7.50 worth of call savings to be made.

Against the purchase costs of the Mercury phone are the rental savings (approximately £2 per quarter per phone) on renting a phone from BT. If a Mercury phone is used instead of BT's, then the phone can be returned to BT for a reduction in rental to line only charges.

Mercury uses a wholly-digital network. Because of this, the 'mush' and reduction in volume associated with BT trunk calls is considerably reduced. Often, even with the clicks and whirrs of the local 131 call to Mercury, and the return to the local BT network at the distant end, call quality is as good as a local call on your own exchange.

Such call clarity has considerable advantages for modem users. As well as the call savings, the lack of line noise makes file transfers more reliable. In the case of error-checked transfers (Xmodem, Kermit etc) fewer error blocks mean shorter calls – further reductions in charges for online systems such as Telecom Gold, One to One etc.

Customer services (operator, directory enquiry and general enquiries) are available 24 hours a day, 365 days a year on Mercury. Thus, if you have a billing problem at 3pm on a Sunday afternoon, a quick call to Mercury customer assistance can be made. Try doing that with BT billing!

The final advantage of Mercury is its charging structure. Instead of calls being charged for in 4.4p blocks, with no pro rata charges for 'straying' just a few seconds into the next unit charging period, Mercury charges are calculated to three decimal places of a minute, the resultant rates being rounded to nearest tenth of a penny.

Since the minimum charge for a Mercury 2200 trunk call is 3p, compared with BT's 4.4p, call savings for short calls can accrue quite quickly. Local calls are available via Mercury, but charges are subject to a minimum of 7p – reflective perhaps of the fact that Mercury uses the BT network for this.

Further Details are available from Mercury Communications, 90 Long Acre, London WC2E 9NP, 0800 424 194 (a Linkline free call).

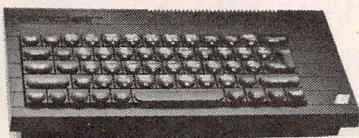
CLASSIFIED

Semi-display — £7 per single cc (+ VAT)
Lineage — 30p per word (+ VAT)

CALL SUSANNAH KING on 01-437 4343 FOR SEMI/DISPLAY ADVERTISING

FOR SALE

SPECTRUM +



£49.99

SCOOP PURCHASE + VAT ADD £3.00 P&P

AMSTRAD CF2 DISCS BOXES OF 10

ORDER HOT LINE
0642 604768

THERSBY COMPUTERS
26 Bowesfield Lane,
Stockton, Cleveland

Payment by cheque, Barclaycard, Access
Spectrum + £49.99 + VAT. P&P add £3.
Discs £22.99 inc. VAT add £1 P&P.

£22.99
+ £1.00 P&P INC. V.A.T.

£ MONEY £ SAVERS £

All Goods Branded and Tested
If you want the best — Forget the rest

★ Introductory Offers ★

25 DS/DD 5 1/4" Branded 10 DS/DD 5 1/4" Branded
Discs in 80 capacity box Discs in a High Quality
Only £18.50 lockable Library Case
Only £6.25

Fully Inclusive!!

This is only a small selection from our extensive stock.
S.A.E. for FREE Catalogue.

BROCKLIS ENTERPRISES LTD.,
4 Huntry Road, Banbridge Down BT32 3BS
Tel: (08206) 24506/27208

TRADE
ENQUIRIES
WELCOME

JUNIOR-WORDPRO
CHILDREN'S WORD PROCESSOR
for all Amstrad CPC's

An introduction to the concepts of
REAL word processing for children.
Very simple operation — comes with
specialty written tutorials.
Also useful for quick notes and letters.
Would suit non-technically minded
adults!

£8.50 (Cassette) £11.50 (Disc)
Overseas please add £1

RAMASOFT (Dept. P)
6 Stile Plantation, Royston,
Herts. SG8 9HP (203)

QL SUPERBASIC TRACE

Single step, breakpoints,
trace-escape and untrace. The
next line is displayed in full and
executed when a key is
pressed.

A must for beginners and ex-
perts alike, on M.D.V. — still
only £5 including P&P.

STACK SOFTWARE

Parsonage Farm,
Great Wolford,
Shipston-on-Stour,
Warwickshire
CV36 5NQ (204)

SPECIAL OFFER FOR THE MONTH

AMSTRAD PC1512 DDCM £746.35

Price includes VAT. Please add £10 for P&P.

★ CPC 6128 (colour)	£365.00
★ PCW 6512	£510.00
★ PCW 8256	£487.00
DMP-2000	£173.00
DMP-3000	£173.50
FD-1 (disc drive)	£90.00
FD-2 (disc drive for PCW)	£125.00
3" Floppy discs (box of 10)	£28.00
RS232 (interface for 464 & 6128)	£53.00
CPS 8256 (interface for PCW)	£53.00
DK Tronics T.V. tuner	£63.00
Competition PRO 5000 joystick	£13.50

(★ Please add £5 for P&P.)

AMSTRAD CPC SOFTWARE

Mini Office II (disc)	£14.50
Protect (disc)	£17.85
Tasword 6128 (disc)	£18.35
Masterfile 11 (disc)	£28.90
Tas-Spell (disc)	£13.45
Mastercalc 128 (disc)	£27.50

(★ Please add £5 for P&P.)

AMSTRAD PC1512 SOFTWARE

AMSTRAD PCW SOFTWARE	
Supercalc 2	£34.00
Dr Draw/Dr Graph	£34.00
Protect w/p (+6128)	£54.00
Tasword 8000	£18.75
Masterfile 8000	£34.00
Tas-Spell 8000	£13.90
Touch-n-Go	£19.25
Scrabble	£15.35
Popular Accounts (Sage)	£64.90
Tomahawk	£15.35
Trivial Pursuits	£15.35
Fair Light	£11.50
Jewels of Darkness	£15.35
Mastercalc	£27.50
Praspell	£18.00

£40.00

£34.00

£54.00

£18.75

£34.00

£13.90

£19.25

£15.35

£64.90

£15.35

£15.35

£11.50

£15.35

£27.50

£18.00

AMSTRAD PC1512 SOFTWARE

Supercalc 3 (ele. spreadsheet)	£56.00
Wordstar (word processor)	£56.00
Reflex (database)	£56.00
C.P. Promise (database)	£56.00
Sidekick (utility)	£23.00
Touch 'n' Go (tutorial)	£19.00
Accountant (accounting)	£140.00

£56.00

£56.00

£56.00

£56.00

£23.00

£19.00

£140.00

All prices include VAT and delivery in U.K. only.

We specialise in Amstrad hardware and software.

Please ring for details or send an S.A.E. for our catalogue. Customers make cheques payable to:

CHILTERN COMPUTER CENTRE

100 HIGHTOWN ROAD, LUTON, BEDS LU2 0DQ (UK)

TEL: (0582) 400305

(142)

Atari 800 XL / 130 XE Essential Utilities

Transdisk Version 3.0

The most powerful tape to disc system for the Atari now made even better. Transfers commercial, machine code, "boot" cassette games or any other software to disc. Single, multi-stage and now even non-standard format tapes present no problem to Transdisk. Plus, enjoy the convenience of loading and running your newly transferred software from an autorun disc menu. No other tape to disc utility for the Atari is as powerful or successful as this! £19.95 inc. Supplied on disc with instructions.

The Freezer!

An amazing new utility for the Atari! "Freeze!" programs while they are RUNNING on your computer. The Freezer then takes over control and allows you to make a back-up copy of the frozen program. The back-up copy will load, and restart from the frozen point, on ANY Atari XL/XE computer, independent of The Freezer! Freezes disc OR tape programs even those that are heavily protected! Easy to use — hit one key to freeze the program in memory then insert a blank disc and hit another key to save it — that's it! £19.95 inc.

Send an S.A.E. or phone for more details of these utilities.

Special offer order both programmes for £35.00

Make Cheque or P.O. payable to DIGICOMM and send your order to:

DIGICOMM

170 Bradwell Common Boulevard, Milton Keynes, Bucks MK13 8BG. Tel: 0908 663708.

(121)

JUMPDISK THE MONTHLY AMIGA MAGAZINE ON DISC

EVERY ISSUE HAS AT LEAST TEN READY
TO RUN PROGRAMMES AND TEN ARTICLES

THE APRIL ISSUE IS NOW AVAILABLE IN THE U.K.

This month's programme highlights include:

DESK CALENDAR: The complete system

BLACKJACK: The best we have seen, in hi-res with speech

BEAM BUSTER: Colourful arcade game

TUNA: 3D underwater animation

and many more plus an APRIL FOOL and some surprises

In the article section we update Dpslide, look at word processing, have an expert's view on Sidecar, review Orabbit and offer some readers hints and tips

ALL ARTICLES MAY BE PRINTED, SPOKEN OR
READ FROM SCREEN

£8.50

Please send cheque or money order made payable to:

**GEORGE THOMPSON SERVICES LTD,
OLD REIGATE ROAD,
BETCHWORTH,
SURREY RH3 7DR**

TELEPHONE: 073 784 6475

Price includes VAT and P&P. within U.K.

(207)

AMSTAT Modular Statistics and Mathematics Package MARKETED BY S. C. COLEMAN

Available for BOTH PCW AND CPC ranges ★★ New Amstat 7

AMSTAT 1 (v1.2!!) – means, standard deviations, variance, skew, kurtosis, 1-sample, 2-sample, and paired t-tests, 1-way AOV with single and multiple confidence intervals, 2-way AOV, correlations, regressions, histograms, scattergrams, transformations, file store and retrieve, output to wordprocessor file, manual. Flexible variables and observations to a total of 500 (+) data points.

AMSTAT 2 – 27 nonparametric tests in 4 programs providing a "complete Siegel". Binomial, Chisquare (3), Kolmogorov-Smirnov (2), Runs, McNemar, Sign, Wilcoxon, Walsh, Randomisation (2), Fisher, Median (+extension), Mann-Whitney, Wald-Wolfowitz, Moses, Cochran, Friedman, Kruskal-Wallis, Contingency, Spearman, Kendall, Kendall partial, Concordance.

"tremendous value" – Tony Kendall, Popular Computing Weekly, 8-14th May 1986.

"I now give it an unreserved recommendation..." – Jo Stork, Business Computing with the Amstrad, July 1986.

AMSTAT 3: FORECASTING

An array of business oriented mathematical and statistical software: Linear and Polynomial regression, Trend and Seasonal Variation, Multiple Regression Analysis, Transformations, Exponential Smoothing, Adaptive Filtering. Graphic display, full print-out, manual suited to immediate use and for teaching.

AMSTAT 4: RESOURCE MANAGEMENT – LINEAR PROGRAMMING MODULE

General Purpose Linear programming + Specialised Transportation and Assignment variants. Capable of analysing and solving problems of sequencing, scheduling, blending, and allocation of scarce resources. 40 page manual, 18 worked examples.

AMSTAT 6: SFANOVA – Up to 8-way analysis of variance for equal cell sizes. Unequal cell sizes on 1-way AOV. Maximum of 2,000 data points (300 on unexpanded CPM 2:2). Input for ASCII files. Output to screen or text file with full AOV table + main and interaction means and Newman-Keuls on main effects. Manual (disc only).

AMSTAT 7: RESOURCE MANAGEMENT II – STOCK AND PRODUCTION ANALYSIS Calculation of optimum re-order levels for both single and multiple items. Dynamic programming to calculate optimum production schedules for single items and consolidation of several results into a multiple schedule. Also Pareto and Lorenz analysis. Output to screen or printer. Includes operational manual with worked examples.

The programs have applications in research of all kinds, education, sales, production planning, work and method study, financial planning, personnel, social work etc.

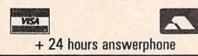
Price list:	CPC	PCW	Price list:	CPC	PCW
AMSTAT 1 v1.2	£25.95	£27.95	AMSTAT 6	£25.95	£27.95
AMSTAT 2 v1.0	£39.95	£39.95	AMSTAT 7	£25.95	£27.95
AMSTAT 3	£25.95	£27.95	AMSTAT 1+2	£49.95	£49.95
AMSTAT 4	£25.95	£27.95	AMSTAT 1+2+3+4	£99.95	£99.95

Cheques and P.O.s to:

S. C. COLEMAN

33 Leicester Road, Ashby-de-la-Zouch,
Leics LE6 5DA.
Tel: 0530 415919

All prices include P&P within U.K.

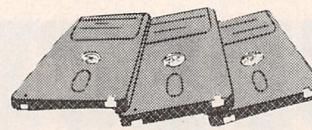


(27)

DESKTOP

Full software lists available on request

AMSOFT 3" CF2



Desktop –
your discount
supplier

ONLY

**£25.00 for 10
£13.00 for 5**

All individually cased + £1 P&P.

SAVE £4.95!!!

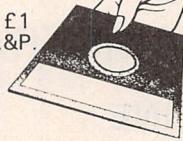
CF2 STORAGE BOX

ONLY

**f4.95 each + £1 P&P.
Holds 10 3" discs**

YOUR No.1 CHOICE

SS/DD	£10.50/10	+ £1 P.&P.	PCW Ribbon	£4.75
DS/DD	£11.50/10		PCW Quality Dustcover Set	£19.84
SS/QD	£13.00/10		PC1512 Quality Dustcover Set	£19.84
DS/QQ	£14.00/10		Cables, Paper Labels etc.	



All prices inc. VAT & Details of Free Discs

(200)

— SEND FOR DETAILS OR ORDER FROM —

DESKTOP

11 West Street, Hett, Co. Durham

Telesales: 0388 767244/813035 (24 hrs.)

**SAME DAY
DESPATCH**

BLANK DISCS AT LOWER PRICES

All discs made by a top manufacturer to highest standards, all certified 100% error free. 2 for 1 REPLACEMENT on any faulty disc other than by mis-use, 5 1/4" have reinforced or FUJI style super hub rings. Trackers can be supplied B side notched. Mimics are manufactured for double sided use on single sided drives. All come with write protects, labels, and sleeves.

SPECIAL OFFER – FREE DISC NOTCHER WORTH £4.75 WITH EVERY 100 5 1/4" DISCS ORDERED

UNBRANDED	10	25	50	100	10 Cased
SS 48tpi	£6.75	£12.95	£24.95	£44.95	£7.75
DS 48tpi	£7.25	£13.95	£26.45	£47.45	£8.25
SS 96tpi	£7.25	£13.95	£26.45	£47.45	£8.25
DS 96tpi	£7.55	£14.95	£27.95	£49.95	£8.55
TRACKER DS 96tpi	£7.95	£17.95	£33.95	£59.95	£8.95
MIMIC F DS 96tpi	£9.45	£22.95	£43.00	£78.00	£10.95

COLOURED DISCS supplied in splits of 5 per colour (10s can be supplied 2 of each) i.e. 25 can be 5 green, 5 red and 15 beige. Other colours are blue and grey.

UNBRANDED	10	25	50	100	10 Cased
COLOURED	£8.95	£19.95	£37.95	£71.95	£9.95
SS 48tpi	£9.95	£21.95	£40.95	£75.95	£10.95
DS 48tpi	£9.95	£21.95	£40.95	£75.95	£10.95
SS 96tpi	£10.95	£23.95	£43.95	£81.95	£11.95

LOCKING DISC BOXES – HOLD 50 £9.45 – WITH 25 TRACKERS £24.95

LOCKING DISC BOXES – HOLD 100 £11.95 – WITH 50 TRACKERS £43.95

DISC NOTCHER – £4.75

VERBATIM VEREX 8" SS/SD – Box of 10 ONLY £14.95

ATARI HARDWARE

520 STM (1/2 meg ram)	£249.95*
520 STFM (1/2 meg ram + 1/2 meg drive & mouse)	£379.95*
520 STFM+ (1 meg ram + 1/2 meg drive & mouse)	£479.95*
1040 STF (1 meg ram + 1 meg drive & mouse)	£559.95*
520 STFM & SM 125 HI RES MONO MONITOR	£479.95*
1040 STF & SM 125 HI RES MONO MONITOR	£659.95*

(One year warranty on all hardware)

* Only we give you a 5 disc pack of Public Domain software including CPM emulator, 5 blank discs and dust covers for hardware all free!!!

BLANK 3 1/2" DISCS

135tpi	10	25	50	10 Cased
SS/DD	£14.95	£34.95	£64.95	£15.95
DS/DD	£17.95	£38.95	£74.95	£18.95

LOCKING DISK BOX of 90 £19.95
LOCKING DISK BOX of 40 £10.95

No extras, all our prices are fully inclusive. Many ATARI 8 & 16 BIT programs – just write for more info. Cheques etc. payable to **STORT SOFT**. (International orders add 10% and remit in Pounds Sterling by Bank Draft or Int. Giro.)

Send to:

STORT SOFT
18 Crown Close, Sheering,
Bishop's Stortford, Herts CM22 7NX

(171)

SIREN SOFTWARE

- ★ Requires hardware and software projects for the Amstrad CPC computer.
- ★ We are looking for a Manchester based hardware enthusiast to help design and prototype add-ons for the Amstrad. Top rates will be paid.
- ★ Software authors. We are looking for utility software to add to our own range which currently includes discovery plus master-disc, printmaster etc. Lump sums or top royalties with advance payment are available for top quality software.

Please phone or write in confidence to:

Siren Software
2-4 Oxford Road,
Manchester M1 5QA
Tel: 061-228 1831

(205)

ATARI ST PUBLIC DOMAIN

Why reinvent the wheel? We have a large selection of languages, demo's, utilities, comm's and games etc, available. A stamp for our list will save you hours of frustration.

Discs from £3.95 to £4.95 inc.

MCSOFT

9 Abingdon Gardens, Bath,
Avon BA2 2UY

(178)

COLOURED 5-25" DISCS

IN MIXED PACKS OF 25
Complete with sleeves and labels
Colours: 7 red, 6 blue, 6 yellow, 6 grey
100% error free. Lifetime guarantee

**SINGLE SIDED £14.25
DOUBLE SIDED £15.50**

3-5" GIFT BOXES OF 10
Double sided £17.50 100% error free

ALL PRICES INCLUDE VAT AND POSTAGE

CHEQUE OR P.O. TO: J.J. DISKS,
MIDDLE COTTAGE, SETON MAINS, LONGNIDDERY,
EAST LOTHIAN EH32 0PG. TEL: 0825 53359 (190)

NEW! SEAL 'N' TYPE NEW!

Removable, re-washable, re-usable!

TYPE-THROUGH PROTECTIVE KEYBOARD
COVER FOR AMSTRAD PC AND PCW
£7.50 plus £1.25 P.P.

Watch this space for other models.
Patent pending, registered design

From: **KADO**, Kilmore Court,
279 St Margarets Road, Twickenham,
Middlesex TW1 1PN

(152)

DUPLICATION

jbs records COMPUTER PROGRAMS

REAL-TIME or HIGHER-SPEED professional Cassette
Duplication and Blanks 1 to 1,000+. Computer printed
cassette labels, BBC & PC Disk copying 1 to 500+.
Fast Security Delivery Service.

FILTERBOND LTD. - JBS RECORDS DIV.,
FREEPOST, 19 Saddlers Way, Hertford SG14 2BR.
0992 500101

17

RECRUITMENT

COMPUTING NETWORK TECHNICIANS

£7,344 - £7,896pa inc.

To join a team of technicians assisting with the installation, operation and fault identification of communications network equipment, microcomputers, terminals and peripherals, and the testing and maintenance of microcomputer software libraries.

Opportunities exist to work either at the polytechnic's art and design courses centre, working in the fast-expanding area of applying computing to art and design (post ref. N303B), or the Middlesex Business School, specialising in business applications (ref. N305B). Relevant experience or qualifications are expected.

Write with S.A.E. (min. 9in. x 4in.), quoting the appropriate reference for further details and application form: Personnel Office, Middlesex Polytechnic, 114 Chase Side, London N14 5PN. Closing date 13 April.

Middlesex Polytechnic

BITS & PCS

Spectrum 48K plus.....	£75.00
Atari 800XL	£60.00
Vic 20	£35.00
C15	£45.00
Spectrum timex printers	£30.00
Spectrum interface plus microdrive	£80.00
CBM cassette units	£30.00
Spectrum compatible cassette units	£25.00
Electron plus 1	£65.00
Commodore power pack	£18.00
Ex-demo discs 5 1/4"	£4.75 for 10
3 1/2" DD/DD boxed in 10s	£17.50

All prices include postage and packing

BITS & PCS

6 Alness Close, Kettering, Northampton

Tel: 0536 516709

(199)

MACSOFT DISCOUNT CLUB QL UTILITIES

*MONITOR (Q Jump)	£14.00
*ASSEMBLER (GST)	£16.00
*MACRO ASSEMBLER (GST)	£32.50
DECISION MAKER (Triptych)	£22.00
PROJECT PLANNER (Triptych)	£25.00
CASH TRADER (Accounting Software)	£37.50

SPECTRUM UTILITIES

PASCAL (Hi-Soft)	£20.00
C (Hi-Soft)	£20.00
DEWPAC 3 (Hi-Soft)	£12.00
FINANCE MANAGER PLUS 80 (OCP)	£9.99
ADDRESS MANAGER PLUS 80 (OCP)	£9.99
VAT MANAGER (OCP)	£9.99
STOCK MANAGER PLUS 80 (OCP)	£9.99
TASSWORD 3 (TASSMAN)	£13.00

Send s.a.e. for QL and Spectrum catalogues. UK orders only (p&p included). Cheques/P.O.s to:

MACSOFT DISCOUNT SOFTWARE,
4 Kelvin View, Torrance, Glasgow G64 4HQ.

(94)

QL 4MATTER SUITE V6.2

CORRUPT MDV masters ... WHY...?

LOCKSMITH a VERY fast MDV copier with 3 copiers in one. Deals with more than just "most software", it "keys" for all without exception.

4MATTER copies mdv to fip with as much success as most MDV only copiers and in most cases does away with the MDV2 restriction. Also has other utility FNs and free 128K shrink. Sooner rather than later, you will find genuine need for these progs so bolt the stable door NOW before Neddy escapes.

MULTISPOOL tasks behind Quill etc (expanded m/v) giving up to 32000 doc's from 1 disc access.

LOCK = £10; 4MAT & LOCK = £18; MSPL = £10

Prices inc. P.&P. Cheques/P.O.s to:

Steve Jones, ZITASOFT UK, 93 FOXBOURNE ROAD, LONDON SW17 8EN

Outside Europe add £1

(169)

DISCS

3" per 10	£26.95
AMSOFT CF2 IN PROTO BOX	£31.95
3-5" per 10	
MAXELL MF10D	SSDD £22.43
MAXELL MF20D	SSDD £32.63
SONY D3440	SSDD £19.99
SONY D4440	SSDD £32.95
VERBATIM MF350	SSDD £19.98
UNBRANDED (GUARANTEED)	SSDD £15.95
UNBRANDED (LIFETIME)	SSDD £19.95

5-25" per 10

MAXELL MD11D	SSDD £12.95
MAXELL MD20	SSDD £14.95
VERBATIM MD250-01	SSDD £12.95
VERBATIM MD525-01	SSDD £12.95
VERBATIM MD550-01	SSDD £16.49
GOLDSTAR/RPS	SSDD £8.99

All discs cert. 100% error free and are guaranteed for life

Educational and official orders are welcome

All prices inc. VAT and P.P. NO HIDDEN EXTRAS!

(66)

BLANK CASSETTES

WITH LIBRARY CASES

C10	C15	C20	C30
20	7.50	7.70	7.90
50	16.00	16.20	16.90

100 29.00 30.00 31.00 35.00

Fully Inclusive (C.O.D. £1 extra)

DISKS

10 5 1/4" DS/DD £6.50 inc. case

10 3 1/2" SS/DD £16 inc. case

10 3" AMSOFT £26 inc. case

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER £75.00

£150.00

RS232 £35.00

£35.00

PASCAL ROM £35.00

£170

SPECULATOR ROM £1 mb. DISK DRIVE & INTERFACE £175

1 mb. DISK DRIVE & INTERFACE £175

All the above prices are fully inclusive. We stock the entire Memotech Range. Order/Enquiries to:

UK HOME COMPUTERS

£175

82 CHURCHWARD AVE, SWINDON, WILTSHIRE SN2 1NH

24-hr Phone Service 0793 695034

FOR SALE

AMSTRAD 464, disc drive, colour monitor, speech synth. Over £1000 in tape and disc software. All for £500. Tel: Manchester 061-980 4667.

PROGRAMMING TECHNICIAN wanted. Six months programming experience (minimum) using machine code on Spectrum, Commodore 64 and Amstrad. An interest in hacking into software protection and writing /developing new forms of protection. Contact Michael Hodges on 01-985 2391, Unit 7D, Kings Yard, Carpenters Road, London E15 2HD.

WANTED. Computerised football league results. Any format considered. Details and price to: Stephen Horton, 10 Westminster Close, Staf-ford ST17 0AE.

BONDWELL BW8, IBM compatible lap-top with back-lit LCD screen, 3½" and 5½" disc drives. Cost £1250, will accept £875. Tel: 01-584 5816.

ATARI STM, 1 meg ram, 2 x 1 meg disc drives and over 120 discs packed with all the latest software including games, business and utility programs. Valued at over £3000. Sell for only £800. Tel: 05827 69152.

100 BRAND NEW Sony 3½" discs in sealed boxes of 10 at only £140 the lot. Epson LX80 printer with friction and tractor feed only £150. Tel: 05827 69152.

GENUINE SURPLUS, few boxes only top quality, lifetime guaranteed discs 5½" DSDD £5.50, SSDD £5, 3½" DSDD £18, SSDD £14. Cheques to: G. Lewis, 79 Kingston Road, New Malden, Surrey KT3 3PA.

PUBLIC DOMAIN/SHAREWARE

for IBM-PC compatibles from only £3/disc. No membership fees. Send 18p stamp for catalogue. PC-Star, P.O. Box 164, Cardiff. Tel: 0222 568924 evenings/weekends.

CASSETTE LABELS PRINTED.

Self adhesive or plain paper, high quality, letterpress printed, your wording, small quantities welcome. Samples/prices: tel: 0326 313605.

ATARI ST public domain discs full of utilities, games, languages, etc. S.A.E. for lists, +ST-Club infopak: ST-Club (PCW187), P.O. Box 20, Hertford SG13 8NN.

DO YOU OWN A HOME MICRO?

Do you want something more than the usual boring game? This is most certainly for you. Don't just play at life, become part of it by starting your own HOME BASE BUSINESS. The benefits are many and varied. Full or part time. For FREE details S.A.E. to: Mr. G. McGovern (PCW5), 97 Pilton Place, King and Queen Street, Walworth, London SE17 1DR.

QL SUPERBASIC trace single step, break point, trace escape, and untrace, £5 including P&P. Mr. Henderson, Parsonage Farm, Great Walford, Shipston-on-Stour, Warwickshire CV36 5MQ.

DISCS 3½" D/S, £13 for 10. By return. C.W.O. or Barclaycard. Grafton, Dept. DPL, 147 High Street, Huntingdon PE18 6TF.

MAILMERGE and multiple copies from your original locoscript program. Send £1.75 plus stamped S.A.E. to: 46 Falstaff Crescent, Parson Cross, Sheffield S5 8DD.

V.F.M. DISCS

BRANDED DISCS

5.25" 10 DISC EXPRESS	£9.50 inc. P&P
5.25" 10 DATA PRO	£8.50 inc. P&P
3" 10 AMSOFT CF-2	£25.99 inc. P&P
3.5" DD/DS UNBRANDED	£16.99 inc. P&P

UNBRANDED 5.25" DS/DD48TPI

10 SLEEVED IN BOX	£6.50 inc. P&P
10 SLEEVED IN PLASTIC CASE	£7.50 inc. P&P
5 SLEEVED IN BOX	£3.50 inc. P&P
25 SLEEVED. BULK BUY	£14.99 inc. P&P
5.25 or 3.5" STORAGE CASE	£1.25 inc. P&P

We only supply top quality products and offer a full replacement guarantee. All discs 100% error free. Make cheques/POs payable to:

VFM DISCS, UNIT 121, LONGFIELD, HARLOW, ESSEX CM18 6LB

Tel: 0279 411845 (24 hour order line) and 0279 443219
INTERNATIONAL ORDERS ADD 10% £s sterling only

(192)

YOU CAN TURN YOUR micro-computer into a money making machine. Free details from: Oasis Books (CW), 7 Cortis Avenue, Worthing, Sussex BN14 7BQ.

NAME YOUR OWN INCOME. Use your micro to make lots of cash in your spare time. No experience needed. Send S.A.E. for free details. Bookmark (PCW3), 14 Truro Close, Congleton CW12 3BD.

HOW TO DESIGN, develop business systems. A practical approach to analysis, design, implementation. S.A.E. for details. Datascene, Boscombe House, Southend, Essex SS2 5JD.

COMMODORE 128, 1571 disc drive, MPS1000 printer, 1901 monitor, C2N cassette, 2 joysticks, expert cartridge, 150 tapes, 28 discs, other bits. Sell for £750 o.n.o. Will consider splitting. Tel. Dunfermline 728392.

FABRIC RIBBON RE-INKING

Introductory offer: £1.50 each

Send cassettes and payment to:

ALADDIN (Dept PC)
4 Hurkur Crescent, Eyemouth Berwickshire TD14 5AP

We will advise normal price for your ribbon

Tel: 08907 50965 (172)

SERVICES

FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department.

Our computer repair workshop has been an **OFFICIAL** Sinclair Repair Depot for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past.

Send your faulty computer **DIRECT**

SPECTRUM	£18.75 inc parts
ZX81	£11.50 inc parts
16K RAM	£9.95 inc parts
MICRODRIVE	£15.95 inc parts
INTERFACE 1-11	£18.75 inc parts

CALL OR SEND WITH CHEQUE OR P.O.

T.V. SERVICES OF CAMBRIDGE LTD
FRENCH'S ROAD, CAMBRIDGE CB4 3NP

Tel: 0223 311371

28TV

FOR FAST RELIABLE REPAIR

SPECTRUM £16.00
ORIC £25.00

Prices inc. parts, VAT, P&P. We give 3 months warranty on repair. Please send computer with details of fault and cheque made out to:

CHILTERN COMPUTER CENTRE
100 Highgate Road, Luton, Beds LU2 0DQ
Tel: 0582 400305 (184)

FAST COMPUTER REPAIR CENTRE - IN LONDON

*BBC Micro, Commodore, Spectrum *Amstrad, Others

*We sell spare parts

*Used Micrads bought and sold

*Epson Programming Service

Phone: 01-863 7166

PROMPT ELECTRONICS

Unit 4, 15 Springfield Road, Harrow, Middx HA1 1QF
(entrance in Amersham Road) (70)

COMPUTER HIRE

TO HIRE A COMPUTER AND/OR PERIPHERALS BY THE WEEK OR MONTH RING 01-607 0157 or 01-997 6457 WE SPECIALISE IN BBC AND ALSO HAVE A RANGE OF AMSTRAD COMPUTERS FOR HIRE

COMPUTER HIRE SERVICES
294A CALEDONIAN ROAD
LONDON N1 1BA

(9)

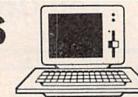
400/800
LOOK NOW
XL/XE ST
Are you having difficulty finding suitable software? If so then look no further. We have a wide range of both hired and purchased one of the largest selections of both UK and American titles to choose from. Games and Utilities for all ages. Hardware and add-on units available. Current prices and special deals regularly offered. If you would like further information please send a large s.a.e. to:

CHARNWOOD PRODUCTS AND GAMES
30A Warwick Avenue, Quorn, Leicestershire LE12 8HD
Tel: 0509 412654

COMPUTER REPAIRS

Fixed Super Low Prices!

Inclusive of parts, labour and VAT



FIRST AID
FOR
TECHNOLOGY

1 week turnaround
Free collection/delivery available for local area

★ INTRODUCTORY OFFERS ★

SPECTRUMS	£14 inc. + Free Game
C64	£22 inc. + Free Game
C16	£18 inc.
VIC20, C+4	£22 inc.
BBC	£32 inc.
ELECTRON	£19 inc.
AMSTRAD 464	£32 inc. + Free Game
C & N CASSETTE UNITS	£19 inc.
C64 P.S.U. FOR SALE	£20 inc.

Please enclose payment with item - 3 month warranty on repair

Please enclose advert with repair

W.T.S. ELECTRONICS

(182)

5-9 Portland Road, Luton, Beds LU4 8AT. Tel: 0582 458375. Telex: 265871

COMMODORE REPAIRS

by Commodore Approved Engineers

★ CBM Power Supplies C16/C64/Plus 4	£15.00
★ VIC 20 Modulators	£8.05
★ VIC 20	From £14.05
★ CBM 64	From £20.00
★ CBM PLUS 4	From £20.00
★ CBM 16	From £18.00
★ DISK DRIVES	From £20.00

For more details write with S.A.E. or Telephone.

G. C. BUNCE & SONS,

36 Burlington Road, Burnham, Bucks SL1 7BQ
Tel: 06286 61696
Mon. to Fri. 9.00-6.00

(86)

COMPSWAP

QL COLOUR MONITOR for sale, a Microvitec Cub colour monitor in perfect condition for £150. Tel: 01-337 0979 evenings.

FOR SALE

FOR SALE Amstrad CPs 464 plus 16" colour portable TV plus MPI plus Amstrad sound synthesizer plus 100 games excellent £340 o.n.o. Tel. 061 370961.

ATARI ST public domain software service. For software and list send a large stamped self addressed envelope to: ST UK, 2 Marina Gardens, Cheshunt, Herts EN8 9QY.

BBC disc drives. Dual units for sale from £115. Tel: 01-968 9214. Also Epson FX80 printer £175, Buzzbox modem £35, Datagem database £35. **C64**, 1541 disc drive, MPS801 printer, £300 worth of software, plus all leads and printer paper and desk, all for £350. Tel: 0442 63308 4-9pm Monday to Friday.

Dealers

BIRMINGHAM

NOW ···· IN ···· STOCK

ATARI 520 STFM

ONLY £379.95

INCLUDING V.A.T. & CARRIAGE U.K. MAINLAND.

For Catalogue - Send S.A.E.
ALLEN JAMES COMPUTERS
831 Stratford Rd., Birmingham, B11 4DA.
Tel: (021) 778 5737

SOFTWARE EXPRESS // Computer Systems LTD

ATARI

We have the largest range of Atari 8 and 16-bit software in the Midlands.

Mail order service available.

514-516 Alum Rock Road,
Alum Rock,
Birmingham B8 3HX
Tel: 021-328 3585

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ
Tel: (041) 332 3944

PL705

GLASGOW COMPUTER CENTRE
Specialists in
Acorn and Atari ST Computers
VIRGINIA GALLERIES
(1st FLOOR)
33 VIRGINIA STREET
GLASGOW G1 1TU
TEL: 041-552 1522 (136)

COMMODORE 64, disc drive, MPS 803 printer, C2N cassette deck, joystick, plus over £800 of games on cassette/disc, £400 the lot. Tel: 01-804 8761 after 5pm.

ATARI 800XL/130XE owners. Four programs on one boot disc to transfer from tape to disc (single stage). Disc to disc, etc. £3.50. M. Furnell, 163 Bishopdale, Brookside, Telford TF3 1SQ.

AMSTRAD PCW 8512 word processor £250. Tel: Birkenhead 051-655 7712 and ask for David. Phone after 6pm.

AMSTRAD 6128, colour monitor, DKtronics tuner, over £600 of software, joystick, magazines, etc. £425 o.n.o. Also 2nd disc drive £75 o.n.o. Tel: 01-368 3667.

AMSTRAD CPC 6128, boxed with colour monitor. Over 40 games including G.A.C., Animator, Hitchhikers (discs), cassette recorder and magazines included. £400 o.n.o. Excellent condition. S. Marston, 3 Netherend Road, Penrith CA11 8PF.

AMSTRAD 6128 (colour) with tape, joystick and approx. £700 of software on tape and disc (including some business packages). Excellent condition, £500. Tel: 01-310 7010 evenings or weekends.

ATARI SMM 804 printer with printer stand for paper for ST Atari computer. As new, still in box, £90. Tel: Aylesbury 28555.

QL SANDY 256K Thru-Con ram card, new, surplus to requirements, £60. Supertoolkit II V.2.03 Eprom with disable switch, manual etc. A must for QLs, £20. Tel: Cornwall 0726 81 5758.

SPECTRUM 48K, Elite keyboard, I/F, M/D, joystick I/F, DKtronics lightpen, data recorder, software, £250. Sharp MZ-80A, software, £90 or swap both for Atari 520 STFM or Amstrad 8512. Tel: Hereford 761086.

Dealers

ESSEX

ESTUARY
PERSONAL COMPUTERS

318 CHARTWELL NORTH
VICTORIA CIRCUS SHOPPING CENTRE
SOUTHEND ON SEA
Tel: (0702) 614131

PL484

NOBLES
14-17 EASTERN
ESPLANADE
SOUTHEND-ON-SEA,
ESSEX
Tel: (0702) 63377/8

PL908

ATARI ST, Software Exchange Club. Two types of swap offered for free membership. Send large s.a.e. to Atari ST Software Exchange Club, 3 Rawcliffe Landing, Shipton Road, York YO3 6XL.

SPECTRUM 48K, keyboard interface 1, twin microdrives, Brother HR5 printer, AMX mouse, joystick, 60 cartridges, over £420 software, magazines, case and more. Worth over £1200, sell for £475. All boxed. Excellent condition. Tel: 01-337 4965.

WANTED. Languages for Spectrum and Amstrad CPC464 lisp, logo, C, micro-prolog. Contact Mr. Freeman, 8 Boulton Grove, Hull, Humberside HU9 3ED.

QL BARGAIN, excellent condition, hardly used, boxed with match point. £80 or swap for CBM 64, must be in good condition. Tel: Now! Contact Dean on 021-357 3814.

CBM 64, 1541 disc drive, MPS801 printer, midi interface, books, magazines + subscription to your Commodore. Many games, laser basic, compilers, Pascal, assemblers. £450 the lot. Tel: 01-946 9757 after 6.30pm or weekends.

COMMODORE Amiga system 2, comspec 2mb expansion, software inc. Grabbit, ramdisk and public domain. 5 months old, virtually unused. Tel: James Dibben on 061-834 2332 5pm-5.30pm.

HOFFMAN. A quality arcade adventure for the Spectrum. Send £4.99 including P&P. to M. Johnson, Flat 15, Broadgate House, Ladybridge, Bolton, Lancs BL3 4PQ.

COMMODORE 128D, 1901 colour monitor plus some software - £650 o.n.o. Tel: Ingrebourne (04023) 74856.

MSX games, utilities, books for sale. Buyer collects, Wirral. Including Hobbit, 5 Star, Computer H175, JSW II, etc. Cost £200+, accept £80. Free MSX mags. Will split? Tel: 051-678 9775 after six.

AMIGA USERS: new Amiga owner has 3½" discs for sale. £10 for 10, also 5½" discs, £20 for 50. Both include postage. D. Cannar, 4 Alexandra Terrace, Undercliffe, Bradford, West Yorks BD2 3EH.

Dealers

LEEDS

MICROPOWER
NORTHWOOD HOUSE
NORTH STREET
LEEDS LS7 2AA
Tel: (0532) 458800

PL683

LIVERPOOL

Microbyte

We talk business, not bits & bytes
NO. 1 ON MERSEYSIDE FOR
ATARI AND AMSTRAD
71 SEAVIEW ROAD, WALLASEY,
MERSEYSIDE L45 4QW
(051) 630 6933/638 1420
10 am - 6 pm

MAIL ORDER
SERVICE AVAILABLE
(31D)



ATARI ½-MEG DRIVE, £70 o.n.o. Tel: 0767 292116 (Grahame)

AMSTRAD PC twin drive, colour monitor, bundled software, plus Ability (integrated word processor, spreadsheet, database and graphics). £680 o.n.o. Gemwrite, Gemdraw, £40 each. Tel: Putney 01-785 2739.

ATARI ST software, complete with unused registration cards. Modula 21st £60, Habawriter II £50, Infocom Moonmist £10. Tel: Putney 01-785 2739.

AMSTRAD 8256. Serial and parallel interface (CPS8256) £25. Turbo Pascal plus Turbo Tutor plus books £45. Tel: Putney 01-785 2739.

MASTERFILE DATABASES, following titles available: Amsdos Basic Instruction Set, Countries of the World, English Football Clubs, Famous Cocktails. All £1.50 each on cassette. Mr. C. Jones, 105 Dorchester Road, Weymouth, Dorset.

AMSTRAD CPC464, colour with disc drive. Mirage Imager, joystick over 30 pieces of software and discs, v.g.c. Worth over £600 software, original as new £250. Tel: Reading 0734 332417.

WANTED URGENTLY Multiface I must be cheap and alive! Write to Robin Alway, Church Cottage, Abson, Wick, Nr. Bristol BS15 5TT.

COMMODORE 64 and Amstrad CPC software hire. Lots of games at low prices, membership £5. Write to M. Sibthorpe, 18. The Stray, Darlington, Co. Durham DL1 1EP.

WANTED. Multiface II and 64K ram expansion for Amstrad CPC 664. C64 software for hire. Write to K. Canwell, 25 Pollards Gossops Green, Crawley, Sussex RH11 8ES.

CBM 64, 1541 disc drive with Dolphin 1525 printer with Tasword and Print Shop, joystick plus software, £250. Also music expansion system plus keyboard and F.M. editor and sound sampler, £100. Tel: 01-595 9315.

COMMODORE 128, 1570 disc drive, C2N cassette unit, Quickdisc + cartridge C128 and C64 programmers reference guides, parallel printer interface, joysticks, software. Sell for £400 o.n.o. Tel: Thetford (0842) 3077.

Dealers

LONDON

GALLERY SOFTWARE
1st FLOOR
THE ARNDALE CENTRE,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941

27PL29

YORKSHIRE

YORK COMPUTER CENTRE
★ Specialists in Atari
★ Mail order service available
9 Daveygate Arcade
York
Telephone: (0904) 641862

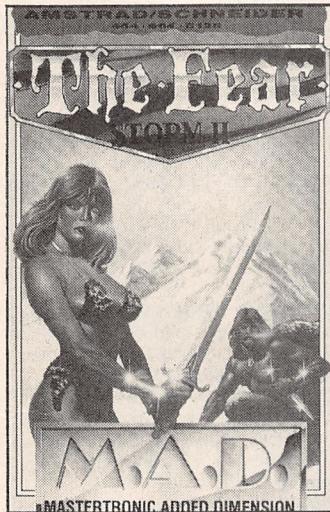
17PL29

New Releases

John Cook looks through this week's new arrivals

Amstrad CPC

Program *The Fear - Storm II* **Type** Arcade Adventure **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London WC2.



Just like success breeds success, success also breeds sequels – enter *Storm II*, follow-up to that cheapie *Gauntlet* clone that Mastertronic released in mid-86.

The scam is that while the two heroes were battling it out attempting to rescue this damsel in distress (just in case you missed the first instalment), back at the ranch, the wizard Agravain's daughter, Silver, and her toy boy, Prince Frost, have received news that the villain of the piece, Una Cum has acquired The Fear.

The Fear is not a new wave four man Thrash Metal band, but an artefact of awesome power – so natch, the duo set out on a quest to get it back etc.

The graphics are very similar, if slightly more detailed than the original.

Taken as a cut price *Gauntlet* clones, it's a good deal, but if you have already purchased *Storm I*, you might feel that the program isn't significantly different enough to buy the follow up, even at £2.99.

Program *Colony* **Type** Arcade/Strategy **Price** £2.99 **Supplier** Mastertronic, 8-10 Paul Street, London WC2.

See MSX listing for comment.

Program *Strike! Type* Arcade **Price** £2.99 **Supplier** Mastertronic, 8-10 Paul Street, London WC2.

Program *Scalextric - The Computer Edition* **Type** Arcade **Price** £9.95 **Supplier** Leisure Genius, Virgin Games, 2-4 Vernon Yard, Portobello Road, London W11 2DX.



You know you're getting old when your parents give away your Scalextric set to the kid next door.

From now on, I'll have to settle for the computer version – a kind of cross between *Pole Position II* and *Racing Construction Kit*. I like it.

Program *Chronos* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London WC2.

Program *Rasterscan* **Type** Animated Adventure **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London WC2.

And what, I hear you ask is an animated adventure? Well, Mastertronic says that it's an adventure with all locations, puzzles, clues and solutions depicted graphically. Rasterscan itself is a large spaceship which has recently been crippled in a space battle – and so is drifting helplessly and relentlessly towards the nearest star.

You take the role of a small, spherical service robot, whose only resident program is one that allows it to mend toasters... not so good.

Guiding your robot around the ship using keyboard or joystick, many puzzles must be identified and then solved

Pick of the week

Scratch n' sniff

Program *Leader Board - Executive Version* **Type** Sports Simulation **Micro Commodore 64** **Price** £9.95 (tape) £14.95 (disc) **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.



Here at Sunshine Towers, *Leader Board* on the ST has become something of an institution. Whereas before, 5.30pm used to be greeted with a stampede to the nearest hostelry, now you're more likely to hear the familiar 'thwak' of a golf ball being sent on a strangely erratic path along the first fairway, closely followed by the odd merry jest as it unerringly makes for the nearest bunker. Yes, bunkers.

On the ST you have bunkers to make your golfing life just that little bit harder – something the original Commodore version lacked, along with trees and rough. Well, 64 owners need be jealous no longer, as *Leader Board (the Executive Version)* has just been released on that format, which evens up the balance between the two.

The basic game mechanism has been left unaltered, but these extra features plotted onto two new courses will certainly give *Leader Board* a new lease of life if you had already mastered the original.

Strangely enough, *Leader Board* has always been much more difficult played on the 64. The speed at which the power and snap indicators move is much, much faster than on the ST, calling for razor sharp reactions. And with the introduction of the extra features, they'll have to be sharper still.

The trees, liberally spread around both courses, act as

before Rasterscan is back in working order.

Ten out of ten for originality of idea and implementation means this gets the big thumbs up.

Program *Strike Force Cobra* **Type** Arcade Adventure **Price** £9.95 **Supplier** Piranha Software, 4 Little Essex Street, London WC2R 3LF.

immovable objects that will stop the ball dead if you collide with them. These are coloured yellow and brown. The rough (coloured dark brown) is much harder to hack your way out of, and so will take about two clubs' worth of distance off a ball when you play your stroke – inconvenient but rarely disastrous. But then come the bunkers.

Bunkers, like rough, take two clubs' worth of distance off the ball... but you are unable to play a wood out of a bunker, and even if you do play an iron, you must hit the snap bar within one pixel of the middle position, or you're in big trouble.

Fail, and the ball can go anywhere – more often than not, still in the bunker. Be warned, tempers start getting frayed after the sixth or seventh attempt.

The only thing that might have been changed that hasn't is the use of a darker shade of green to pick out the greens from the fairway.

But in any case, *Leader Board (Executive Version)* has retained all the playability on the Shop Floor version, but those extra features add that extra challenge that should have hardened gamers queuing up on the first tee.

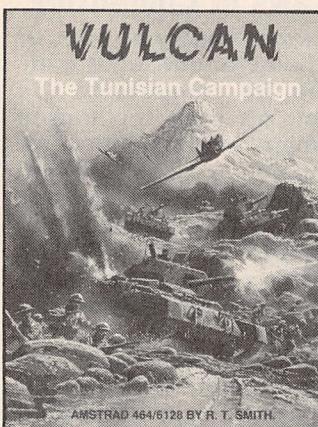
Control four crack storm-troopers, thinly disguised as members of the computer press, in a bid to save the world.

3-D arcade adventure that didn't change the world now on CPC.

Program *Hit Pak* **Type** Compilation **Price** £9.95 (tape) £14.95 (disc) **Supplier** Elite Systems, Anchor House, An-

chor Road, Aldridge, Walsall, West Midlands WS9 8PW.

Program Vulcan - The Tunisian Campaign Type War-game **Price £9.95** **Supplier** Cases Computer Simulations, 14 Langton Way, Blackheath, London SE3 7TL.



Allies vs Axis in 1943, down Tunisia way. The basis of the Desert Rats system has been retained with some extra features – including hidden movement, surely a pre-requisite in any program calling itself a true simulation. Good on Spectrum, looks like it's been repeated here.

Atari ST

Program Eden Blues Type Arcade Adventure **Price £24.95** **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middx.

Another Ere Infomatique title, a conversion of one of the first of their CPC programs to make it over here, *Eden Blues*. Reasonably well received at the time, it's faithfully recreated here on the ST.

Atari XL/XE

Program Hover Bover Type Arcade **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

BBC B/Master

Program Imogen Type Arcade Adventure **Price £8.95** (tape) **£9.95** (disc) **Supplier**

Micro Power, Northwood House, North Street, Leeds LS7 2AA.

After a quiet time from Micro Power, its most interesting release since *Castle Quest*.

2-D arcade adventuring, with the main character, a wizard, able to change into a cat or a monkey – which give him extra leaping ability or climbing ability.

With single colour, but high resolution graphics, you'll find yourself using both the intellect and the reactions in this one.

BBC Compact

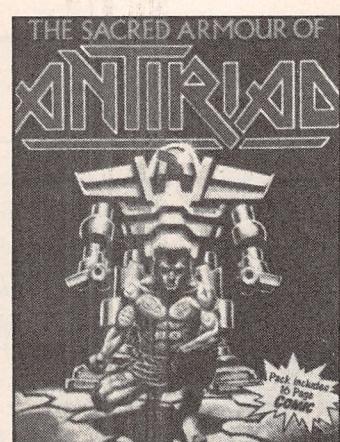
Program Imogen Type Arcade Adventure **Price £11.95** **Supplier** Micro Power, Northwood House, North Street, Leeds LS7 2AA.

C16/Plus

Program Battle Type Arcade **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Commodore 64

Program Hit Pak Type Compilation **Price £9.95** (tape) **£14.95** (disc) **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Walsall, West Midlands WS9 8PW.



Pew – it doesn't take long for a game to come out on compilation nowadays, does it? The classiest (and newest)

of the seven on offer here is certainly Palace's *The Sacred Armour of Antiriad* . . . a superior arcade adventure . . . followed closely by the frenetic *Split Personalities* from Do mark. The others, *Scooby Doo*, *1942*, *JSW II*, *Fighting Warrior* and *Duet*, make up the numbers.

Program Auf Wiedersehen Monty Type Arcade **Price £9.95** **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

The mighty mole leaps into action again – see this issue for full review.

MSX

Program Colony Type Arcade Strategy **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Looks can often be deceptive. When you load *Colony*, and the first screen comes up on the monitor, the first thought is bad.

"Plan view" type maze. Single colour sprites. Three words spring into the brain. Boring, boring, boring. But once you get into the game . . . it's a completely different story.

Once again, you control a droid, but this time, you're in charge of a colony on another planet.

Your aim – to plant, grow and sell mushrooms. The problem – alien life forms outside the perimeter of the base, that is, they start outside. They don't stay there for long. Arcade strategy is the name of the game, as you repair and build fences, plant and harvest mushrooms, maintain and extend your areas of solar panels.

Zapping and trapping are two other of the fringe activities – give this one a go – you're unlikely to be disappointed.

Spectrum

Program The Golden Mask Type Adventure **Price £2.50** (mail order only) incl. P&P. **Supplier** Compass

Software, 36 Globe Place, NR2 2SQ.

Now that the arcade game cottage industry has almost completely dried up, the amateur end of the market is being propped up by the part time adventure writers like Jon Lemmon.

Although not in the same league as Fergus McNeil, Jon makes sensible use of the *Quill* and auxiliary programs in *The Golden Mask* – the second part of his current trilogy.

Basically, it's a silly names quest, but shows some promise. After all, any adventure in which you must type in the instruction *Get Wise* in the second location can't be all bad.

Program Chronos Type Arcade **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Strike! Type Arcade **Price £2.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Colony Type Arcade Strategy **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

See MSX listing for comment.

Program Rasterscan Type Animated Adventure **Price £1.99** **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

See Amstrad CPC listing for comment.

Program Earthshock Type Graphic Adventure **Price £3.99** **Supplier** Eighth Day Software, 18 Flaxhill, Moreton, Wirral, Merseyside L46 7UH.

The first of a new Grafix series of adventures from 8th Day – Liverpool based, budget adventure pioneers. It promises 50% more text compression than on its previous adventures, with one side of the tape having the 'extended' version, the other a graphic version. And to make this an even better deal, *Earthshock* has three different sub-plots in the middle section of the game.

The return of nostalgia - and Space Invaders

Zarquon's knees! Do my very own eyes deceive me? Or is it just the fact that the computer games playing world has gone stark staring bonkers?

There I was, minding my own business, when what should I see but something about the very latest in computer games, which, when you look at it, is nothing more than a jazzed-up and remixed *Breakout*.

Breakout? You mean turning a little knob which moves a little white rectangle on the screen which little white blobs bounce off hitting the sides of the screen and/or coloured bricks which promptly vanish?

Well, er . . . yes! OK, so they've added the odd little frill like calling the bat a spaceship, fancy brick patterns, little monsters which eat your balls or things which make your hat squidgy, but *Breakout* by any other name is still *Breakout*.

I mean, in days way back, when micros could just about resolve rectangular bats and square balls with coloured bricks if you were rich, or different character shapes if you weren't, you could have endless hours of fun playing *Breakout*, which didn't really push the resources of the computer to its limit, but

"Many people have tried to liken the entertainment software business to the pop music market"

nowadays the whole idea I find to be totally ridiculous.

The thought that not one, but two of the major entertainment software houses in this country should jump on the *Breakout* bandwagon only serves to strengthen my opinions of entertainment software houses as being rip-off artists at heart.

Although, wait a bit. Many people have tried to liken the entertainment software business to the pop music market, and maybe the prophecy has been fulfilled. After all, if the top of the charts can be filled by people like Jackie Wilson, Ben E King and Percy Sledge, why shouldn't a *Breakout* game be a top seller in the entertainment software charts?

So, if any software house is

looking for a new smash, and wants to pay me a large fat sum as ideas consultant, I've got this really neat idea. Listen. You have this load of alien-type figures, right, in about five rows of seven columns. They go from one side of the screen to the other, and when they hit the sides they drop down the screen a bit and go the other way, and wait, you also have the bottom row firing shots downwards as they go across.

Then near the bottom of the screen you've got these, like, forts, which get eaten away by all this shooting, and right at the bottom of the screen you've got this sort of gun firing shots up, and the idea is to shoot all these aliens before they shoot you three times, or get to the bottom of the screen. When you've shot them all, another lot appear and the whole thing starts again but a little faster.

Hey and that's not all! You also have this flying saucer thing which goes across the top of the screen every so often which you try to shoot to get extra points.

I've got a really neat name for it, too. Ready for this? I thought we could call it; *Space Invaders* . . .

Antony John Shepherd

NEXT WEEK

Laws of Computing

Popular begins a series of articles about legal matters in computing. We kick off with the thorny subject of your rights as a consumer. What can you do if you buy a faulty product, be it software or hardware? What if the mail order company doesn't produce the goods?

We aim to clarify the issue and make your position clear regarding consumer rights.

CompuNet

Graham Edkins returns with his regular commentary on the CompuNet database for Commodore users.

Sailing

Activision takes to the high seas in this yachting simulation. John Cook dons his lifejacket and reviews the game.

Whatever happened to computer games?

We take a long, hard look at the current state of the computer games market.

Hackers



TECHNOLOGY SO ADVANCED ...

MEMORY

- * 512Kbytes RAM (520ST-M, FM)
- * 1024Kbytes RAM (1040ST-F)
- * 192Kbytes ROM
- * 128Kbytes external plug-in ROM option

ARCHITECTURE

- * Motorola 68000 Central Processing Unit (CPU) with a clock speed of 8MHz
- * 16-bit external data bus
- * 32-bit external address bus
- * 24-bit address bus
- * 8x32-bit data & address registers
- * 7 levels of interrupts
- * 56 instructions
- * 14 addressing modes
- * 5 data types
- * DMA (Direct Memory Access)
- * real time clock as standard

GRAPHICS

- * full bit-mapped display
- * palette of 512 colours

Using Atari Monitors (on 520 & 1040):
 * 640x400 high resolution - monochrome
 * 640x200 medium resolution - 4 colours
 * 320x200 low resolution - 16 colours
 * 80 column text display (40 col low res)

Using Domestic TV (on 520):
 * 640x200 medium resolution - 4 colours
 * 320x200 low resolution - 16 colours
 * 40 columns x 25 lines text display

SOUND AND MUSIC

- * 3 programmable sound channels
- * frequency programmable 30Hz - 12KHz
- * programmable amplitude envelope
- * wave & dynamic envelope shaping
- * programmable attack, decay, sustain, release
- * Musical Instrument Digital Interface (MIDI)
- * MIDI allows connection of synthesisers etc.



STANDARD SOFTWARE
 * GEM desktop + TOS operating system
 * ST BASIC interpreter/language system

INPUT/OUTPUT

- * MIDI out (5 pin DIN) 31.25K baud
- * MIDI in (5 pin DIN) 31.25K baud
- * audio out 1.0V DC peak to peak, 10K ohm
- * audio in 1.0V DC peak to peak, 10K ohm
- * RGB monitor 1.0V DC, 75 ohm
- * mono monitor 1.0V DC, 75 ohm
- * mono horizontal scan rate 35 KHz
- * mono vertical scan rate 71.2KHz
- * sync 5V DC (active low) 3.3K ohm
- * modem/serial RS232C, 50 to 19,200 baud
- * floppy disk 256Kb, 1.3 Mbytes
- * hard disk
- * mouse standard Atari connector
- * joystick standard Atari connector
- * cartridge port 128K capacity
- * RF output (520ST-F) for TV use

OPERATING SYSTEM

- * TOS with GEM environment in ROM
- * hierarchical file structure with sub-directories and path names
- * user interface via GEM, with self explanatory command functions
- * multiple windows + icons
- * window resizing, re-positioning and erasing
- * drop down menus (selected by mouse)
- * GEM virtual device interface

COMMUNICATIONS

- * RS-232C serial modem port
- * 8-bit parallel printer port
- * MIDI port (also for networking use)
- * VT52 terminal emulation

KEYBOARD

- * standard QWERTY typewriter format
- * 95 full stroke keys
- * 10 function keys
- * 18 key numeric keypad + cursor keys
- * variable auto-repeat + key click response
- * keyboard processor reduces CPU overhead

... IT'S AFFORDABLE

ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from £259. The ST was designed utilizing the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built in power supplies and built in disk drives. The TOS operating system and GEM desktop environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 4 retail outlets at Sidcup, Orpington, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have eight years experience of Atari products, longer than any other UK company, and are well established as the UK's No.1 Atari specialist. With a group turnover of over £5 million and in excess of 70 staff, we provide an unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available **ONLY FROM SILICA**. We suggest that you read through what we have to offer, before you decide where to purchase your Atari ST.

FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

- * BASIC Language Disk
- * BASIC Manual
- * ST Owners Manual
- * TOS/GEM on ROM

If you buy your ST from Silica Shop, you will also receive:

- * NEochrome - colour graphics program
- * 1st Word - Word Processor

In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special ST STARTER KIT worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

DEDICATED SERVICE - Only From Silica

At Silica Shop, we have a dedicated service department of five full time Atari based technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1MB RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-F keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £98.50 (+VAT = £100).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any unsightly external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

THE FULL STOCK RANGE - Only From Silica

We aim to keep stocks of all Atari related products and our warehouse carries a stock of £9 million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a complete line of all books which have been written about the Atari ST. A range as wide as ours is something you will find is available **ONLY FROM SILICA**.

AFTER SALES SUPPORT - Only From Silica

Rest assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mailings give news of releases and developments. This will help to keep you fully up to date with what's happening in the Atari market. And in addition, our sales staff are at the end of a telephone line to service all of your Atari requirements. If you purchase an ST from Silica and would like any programming or technical advice, we have a full time technical support team to help you get the best from your computer. Because we have both the staff and the systems specifically dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be achieved **ONLY FROM SILICA**.

FREE CATALOGUES - Only From Silica

At Silica Shop, we recognise that serious users require an in-depth information service, which is why we mail free newsletters and price lists to our ST owners. These are up to 48 pages long and are packed with technical details as well as special offers and product descriptions. If you have already purchased an ST and would like to have your name added to our mailing list, please complete the coupon & return it to us. The information service is available **ONLY FROM SILICA**.

FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight METRO courier service **FREE OF CHARGE** to customers within the UK. This method helps to ensure minimum delay and maximum protection.

PRICE MATCH - Only From Silica

We hope that the combination of our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support, will be enough to make you buy your Atari equipment from Silica Shop. However, if there is something you wish to purchase, and you find one of our competitors offering it at a lower price, then please contact our sales department, providing us with our competitor's name, address and telephone number. If our competitor has the goods in stock, we will normally match the offer (on a same product - same price basis) and still provide you with our normal free delivery. We realise that we are not the only company who will match a competitor's price. However, if you come to us for a price match, you will also be entitled to our after sales service, including free newsletters and technical support. This makes our price match promise rather special, something you will receive **ONLY FROM SILICA**. We don't want you to go anywhere else for your Atari products. So shop at Silica, the UK's No1 Atari Specialist.

520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a monitor, in case when you buy the 520ST-M from Silica, you will also receive the FREE Silica ST Starter Kit. During 1987, many software houses will be introducing terminal software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfill this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a ½ Mbyte model £149 and a 1Mbyte model £169. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica ST Starter Kit see paragraph on the left. To make the 520ST-FM ready for use straight away, an Atari monitor built into the keyboard, a ½ megabyte disk drive for massive storage and retrieval, allowing you easy access to the massive range of disk based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages:

520ST-FM Keyboard Without Monitor	- £399 (inc VAT)
520ST-FM Keyboard + High res mono monitor	- £469 (inc VAT)
520ST-FM Keyboard + Low res colour monitor	- £599 (inc VAT)
520ST-FM Keyboard + Med res colour monitor	- £699 (inc VAT)

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one mains lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1028K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone computer or as a mainframe computer as a terminal. The 1040ST-F not only features a more powerful memory by the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £99). The 1040ST-F keyboard costs only £599 (inc VAT) and unless a modulator upgrade is fitted, will require an ATR or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard Without Monitor	- £599 (inc VAT)
1040ST-F Keyboard + High res mono monitor	- £699 (inc VAT)
1040ST-F Keyboard + Low res colour monitor	- £799 (inc VAT)
1040ST-F Keyboard + Med res colour monitor	- £899 (inc VAT)

The 1040ST-F comes with a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

ATARI ST

£399

To: Silica Shop Ltd, Dept PCWK 0287, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: Initials: Surname:

Address:

Do you already own a computer
If so, which one do you own?

Postcode:



SIDCUP (& Mail Order)

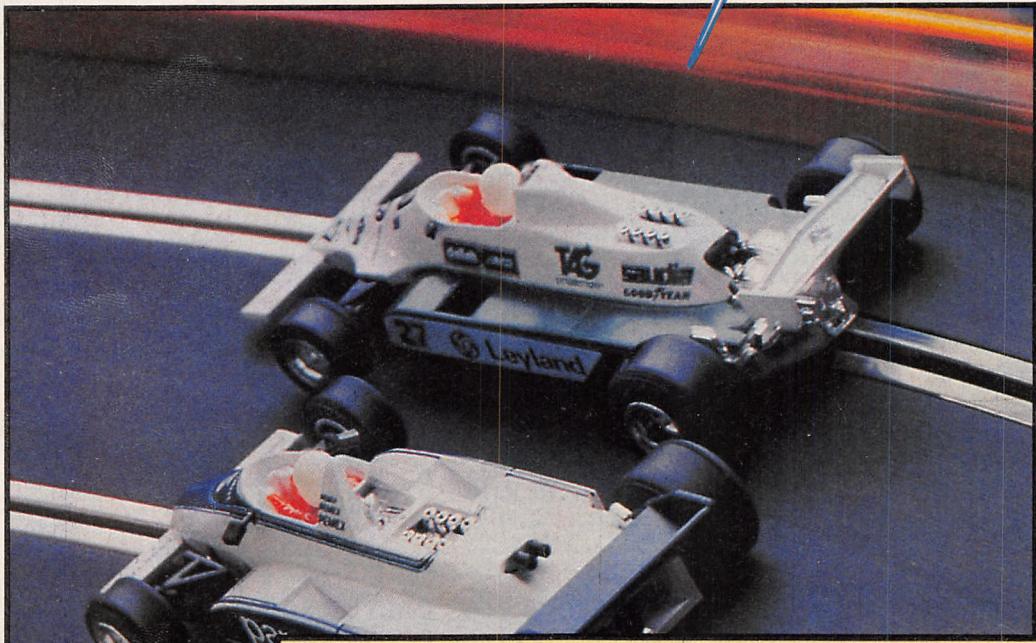
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

LONDON

Lion House (1st floor), 227 Tottenham Court Rd, London, W1

LONDON

Selfridges (1st floor), Oxford Street, London, W1A 1AB



This split-level racing game incorporates all the excitement of the race track, in fact many race tracks, as it features an icon-driven track designer that allows you to construct your own tracks as well as select scaled Formula 1 championship circuits.

One or two people can play and have their own 3D view. Some ingenious programming has made the feel of controlling the cars very realistic, and you can even bump and push your opponent's car if you want to play dirty!

NOW AVAILABLE FOR
AMSTRAD CPC

£9.95

Also available for **Spectrum 48/128** and
Commodore 64/128

£9.95

SCALEXTRIC® IS A REGISTERED TRADE-MARK OF HORNBY HOBBIES LTD. © ALL COPYRIGHTS RESERVED Leisure Genius® is a wholly owned subsidiary of Virgin Games Ltd.

Please send me a copy of **SCALEXTRIC® AMSTRAD CPC cass £9.95** disc £14.95
SPECTRUM 48/128 cass £9.95 **COMMODORE 64/128 cass £9.95**

Name _____

Address _____

Please make cheques and postal order payable to **Virgin Games Ltd.**, and post to
Virgin Games, 2/4 Vernon Yard, Portobello Road, London W11 2DX. Please do not post cash.

